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BRITISH GAME BIRDS



HUNGARIAN PARTRIDGE (MALE).

British Game Birds

By

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ILLUSTRATED

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PREFACE

Although the title of the work, "British Game Birds," has been chosen in preference to any other, it is hardly consistent with the knowledge we possess relative to the countries in which the various species of game birds originated, the bulk of which have now become naturalised in Great Britain, though certainly not indigenous to it. Books upon game birds—as in almost every other field of literature—have been published from time to time, some being of a technical, and others of a semi-technical character; nevertheless, the author and publisher have confidence in believing that a work based upon lines such as the present one will prove of sufficient interest to stimulate still further research on the subject.

To the sportsman and the keeper this treatise, it is hoped, will appeal.

We have pleasure in thanking Messrs. G. Ball & Sons Ltd. for kindly giving permission to reproduce the illustrations in black and white of Game Birds appearing in this volume.

British Game Birds

The Red Grouse

(Lagopus Scoticus)

WE believe that it is usually acknowledged amongst shooting men that grouse shooting is the most princely form of sport, and one that calls forth not only good marksmanship, but also a large amount of energy, from those participating in it.

Now that grouse driving constitutes the chief method through which these birds are brought to the guns, the shooter does not require to undergo the same amount of physical exertion as formerly, neither does he derive the same benefit so far as health is concerned, as when the birds were walked up to.

The old plan of shooting over dogs proves too slow for the younger generation of sportsmen, consequently permanent butts are erected on the moors, and the birds driven over the latter.

The Red Grouse is an exclusive inhabitant of the British Isles, inhabiting the wild moorlands throughout Great Britain and Ireland, and the mountainous districts of South Wales. In Ireland, the Moor Cock is not so generally distributed as in Scotland, never-

theless, good sport can be obtained in the former country.

It is peculiar that this game bird does not occur in any counties in England that lie South and East of a line drawn from Bristol to Hull. It is almost absent from the Shetland Islands, though several attempts have been made to establish them there, so far, we believe, unsuccessfully.

Grouse thrive the best amongst rugged mountains, and these birds are the most plentiful in the Scottish Highlands, more especially in Inverness-shire and Ross-shire, where some of the principal grouse moors exist.

The Red Grouse is a ground bird, and the moorlands where it takes up its abode must be clad with heath, or heather, as this herbage constitutes a considerable proportion of its food.

The Ptarmigan, on the other hand, inhabits stony and barren portions of the mountain ranges, whilst the Black Grouse haunts the wooded and swampy parts of the hills. It is a bird that is very fond of skulking in the heather, in which it will often run a considerable distance before rising ; but once on the wing, though not a high flyer, the Red Grouse is a sharp and strong bird in flight. Although not naturally a wild bird, it soon becomes so if it is much disturbed, hence the reason why gamekeepers on grouse preserves have to exercise the utmost vigilance to prevent strangers from trespassing upon the moors.

The same remark applies during the shooting season. It is not a difficult matter to drive the birds on to an adjacent moor if shooting is not discriminately carried out, particularly if the adjoining preserves have not been shot over recently.

Although always socially inclined, the Red Grouse becomes gregarious in the autumn, and with this it becomes more wary and wild, though more so in some years than others.

During snow storms Red Grouse will burrow into the snow drifts for shelter.

The Red Grouse is monogamous and pairing commences early in the spring.

The nest is on the ground amongst the heather, and sometimes in grass and rushes. It consists merely of a hollow scratched out in the soil, containing a few pieces of dried heath, grass, or leaves.

Although an early breeder, the Red Grouse rarely goes to nest earlier than March or April, even on sheltered ground, but in higher ground it is usually several weeks later. But a great deal will depend what kind of a season it is. For instance, if there are late snow storms, egg-laying will be deferred. The eggs vary in their number from eight to twelve, sometimes fifteen, and are of a yellow colour, or reddish-brown, covered with streaks or blotches of umber. The hen bird alone sits on the eggs, and the cock bird assists in rearing the brood. Sometimes several broods will join together to form a pack of birds consisting of three or four dozen.

It is of interest to note that the parents take the young broods to the wettest part of the moor, evidently in search of some particular kind of food. In the event of the first lot of eggs being destroyed, these are usually replaced by another clutch of eggs, but late grouse, like late partridges and pheasants, never seem to have the same stamina that the earlier broods have.

Red Grouse often make their nests near a pathway across a moor, or else close to a patch of heather that has been burned, but the sitting bird harmonises so completely with its surroundings that it is not an easy matter to detect its presence, unless it be by those who are accustomed to such work.

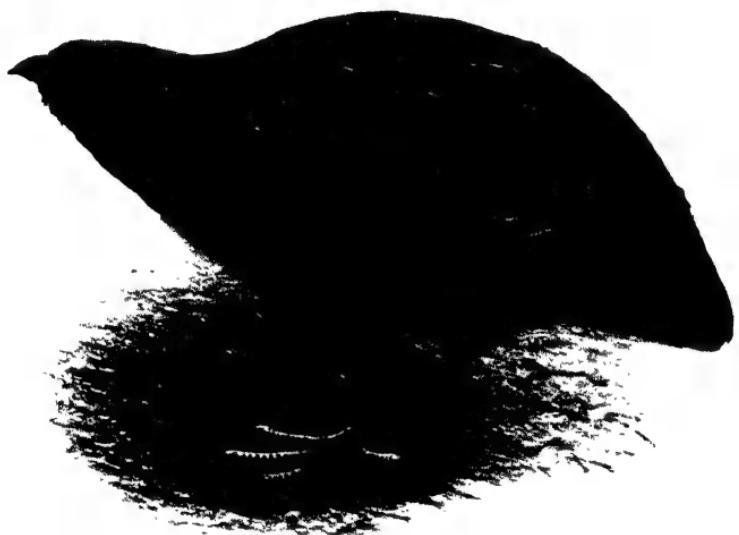
The number of eggs laid is to some extent regulated by the weather. If cold about seven or eight eggs only will be laid, and three or four more if the season is a favourable one.

The Red Grouse is a very hardy bird, nevertheless a dry season is the one which suits this game bird best.

As previously stated, grouse live mainly upon the common " ling " (*Calluna Vulgaris*), and the fine-leaved heath (*Erica Cinerea*), but also upon the bilberry and cranberry, clover, and grit, and if food becomes scarce they will resort to eating hips and haws. Grit is essential for their existence.

The Genus *Logopus*, which includes the Red Grouse, the Willow Grouse, and four species of Ptarmigan, is of particular interest, as the members of it undergo annual changes of plumage. But what is more remarkable in the Red Grouse is the fact that such changes of plumage do not occur in the male and female at the same season. In the cock bird moulting occurs in the autumn and winter, and in the hen in summer and autumn. Consequently the former has no distinct summer plumage, the autumn and winter one serving it during the breeding season. On the other hand, the hen bird has a distinct summer plumage and a distinct autumn one.

Why these changes of plumage should occur in the



HUNGARIAN PARTRIDGE (FEMALE).

two sexes at different periods is a problem to which no answer can be given.

The male grouse exhibits three distinct forms of plumage, one being red, another black, and the third white spotted; the first and the last forms are the commonest. The red coloured plumage is without any white specks on the breast, whilst in the spotted form the feathers on the breast and under part of the body are tipped with white. In the hen grouse five different types of feathering exist, namely, the white spotted, the red, the black, the buff spotted, and the buff barred.

The buff spotted form is the commonest, the feathers on the upper parts being spotted at their tips with whitish buff.

The red and the black types are rare, more especially the black. The white spotted form is common, the feathers on the breast and belly, and occasionally those on the head and upper parts, are tipped with white in the male.

Young grouse closely resemble the hen bird in colour of plumage in the middle of summer, but towards the end of October they are difficult to distinguish from the older birds.

After the breeding season, the adult male undergoes a complete autumn moult, the tail feathers, those on the feet, and the quills are replaced. As a rule the feathers on the upper part are black, but barred with tawny buff. The chest feathers are widely barred with buff, and so are many of the flank feathers. The winter plumage begins to make its appearance early in September, and consists of black feathers with

dark chestnut bars or mottling, but the chestnut colour prevails. When the winter moult is complete there will be no change in the plumage till the following autumn moult commences.

In the female the autumn-winter plumage, on the under parts of the body, is a dark chestnut, mottled and barred with black, whilst the feathers of the upper parts of the body are black, with irregular bars of a reddish tint, the tips of the feathers being buff. In the summer plumage of the female the feathers in the upper parts of the body are almost black, with their margins orange buff and barred with the same colour. The feathers on the chest are all widely barred with black and yellowish buff, and this change is generally brought about by moult; if not, then by re-arrangement of the pigment. This black and buff plumage affords a good protection to the sitting bird, and as a rule she has got her complete summer dress by the time she commences to sit.

In order to note all these varying conditions of plumage it is necessary to examine a considerable number of birds at different seasons in the year, as it is only by comparison of the feathers that any degree of accuracy in relation to the varying changes of plumage, can be obtained.

Concerning the food of grouse, the following remarks occur in the "Gamekeeper," of April, 1903, and as they are by that well-known authority, the late Mr. W. Prior, such must necessarily carry the weight:—

"Heather is the principal food of full-grown grouse, but the birds vary their diet, and for months in the year may never eat heather at all. For instance, on the



RED GROUSE.



higher parts of our moor, where crowberry, bilberry, moss crops, bent, and heather are plentiful at this time of year, examine the crops, say, of four or five grouse at about 10 a.m. In one you will probably find a few hard, brittle leaves of the crowberry plant, a few pebbles of quartz in another, some half-inch stalks and buds of the bilberry plant and pebbles in the third, six or seven heads of moss-crops and pebbles in the fourth, and perhaps only a few leaves of bent and pebbles in the fifth, with probably a few green shoots of heather. Grouse pick up all their grit early in the day, and they eat very little of anything till an hour before dark. At that time they consume a great quantity. I have said 'leaves of bent,' but I am not versed in botany, and therefore did not know what else to call them. Then, again, examine the crops of grouse killed after their evening meal. You will probably find in the first a crop crammed full of nothing but crowberry leaves, the second full of bilberry stalks, in half-inch and quarter-inch pieces, the third stuffed full of moss crop heads, the fourth crammed with heather, and the fifth with heather, bent leaves, moss crop, etc. During this month (March) and the two following months scores of grouse on the lower part of the moor, where moss crops are very numerous, live entirely on them, and this is easily seen by examining their droppings.

"In August and September, when the bent seeds, or, as some call it, the 'goose corn,' is ripe, many grouse never eat heather, but live on the seed for weeks. This, too, is easily seen by looking at the bird's droppings. When there is seven or eight inches snow on the moors I only find a few shoots of heather in the

crops; the rest of the contents consisting of the seeds of heather. When the snow is ten or twelve inches deep, I find the crops are mostly crammed with heather seeds, as the other plants are then all buried. So far in the winter grouse have had no occasion to eat the heather seeds. Last spring we had the most severe frosts that I ever remember. The heather was late in getting into flower, but a finer lot of bloom I never saw, and at the present time I never remember seeing a finer lot of heather seeds. Should not this prove what I have before stated, that the young spring-growths of heather are frost-proof? I found out one hard, snowy winter, many years ago, when I had to take an iron rake to the moor and rake the snow and ice off the heather for the grouse, that the heather was not then frost-proof, and in raking I bruised it. A score of years ago, during the spring months, I used to be rather alarmed at finding a good many dead grouse on our moors, and I thought that the dread grouse disease was beginning. I still find a lot every spring, and during the next two months quite expect to find more. These are generally birds in a bad condition, and their plumage is poor, and nothing much in their crops. Many keepers think this is grouse disease commencing, and make a great noise about it. Grouse, like other birds, must sometimes die of old age and wounds, and the more numerous grouse are on the moor, the more dead birds will be found. Why they die in the spring is a mystery to me.

“I find other dead grouse in fine condition and plumage, with their crops crammed full of food, but can generally account for their loss. For the last fifteen

years I have said that I have no fear of grouse disease ever depleting our moors as long as they are shot in the way in which they have been. No one will ever convince me that over-stocking is not the cause of disease. All the authorities who have now written about grouse for a score or two of years speak of the poor condition of grouse in the spring, and, with all deference to them, I beg most respectfully to say they are quite wrong. Grouse during the spring are in their finest condition, yellow with fat, and at no other period in the year will anyone ever find one particle of fat on a grouse. This is a thing no one has ever seemed to notice. This morning (March 18th) I find there has been a heavy fall of snow in the night. The heather is all hidden, with the exception of the tops, which are just in sight. If a grouse's crop could be examined after feeding time this evening it would contain little but heather seeds."

Grouse Driving

ALTHOUGH successful grouse driving cannot be practised on every moor, it has become so general that a few words in relation to this matter will prove of interest to the reader. The essentials for a successful grouse drive are (1) a good keeper, one with a cool head; (2) well-formed and well-placed butts; (3) thoroughly reliable drivers or beaters; (4) plenty of birds; (5) a good retriever; (6) good flankers.

A few weeks previous to grouse shooting season commencing all the butts should be thoroughly examined, and the necessary re-building duly attended to. On the day preceding the drive any water that has accumulated in the butts should be drained away, and a layer of heather placed both in the bottom and on the top of the butt, to render it both dry and comfortable. Horse-shoe shaped or circular butts are the best and whenever possible they should be in a straight line, though it must not be assumed that grouse can be driven anywhere at the will of the beaters. By watching the flight of the birds, an observant keeper will soon ascertain which direction they will take. The guns must be placed, and so must the drivers, and the latter should have it impressed upon them that they must not talk, or make any demonstrations beyond what is necessary to put the birds over the butts. Each driver must have a red flag, and the keeper should be in the centre of the drivers, and the drivers' flags must be carried well up and kept still, till the birds are on the wing. Shouting and talking is fatal to the success of a drive. When the beaters are put into position, they should form a half-moon shape, the flankers being well forward and the centre back.

If the birds are frightened by the flankers, the outside guns will get no sport, and this leads to dissatisfaction, more especially when those in the end butts know that most sport is to be obtained in the centre ; but a tactful keeper will always endeavour to give an equal degree of sport to every member of a shooting party. If possible the first drive should be arranged



RED GROUSE.

that it can be finished at the lunching place, and also the drivers should be dispatched to the next drive, or else remain a short distance from the butts, until their services are further required. Shot birds should not be searched for until after the drive is over, otherwise many birds may be lost. The approach of the birds to the butts can be signalled by the keeper, either by whistle or signal horn, the latter being a very useful appliance for the purpose. Driving operations should never be continued too late in the day, otherwise the birds will not have time to settle down again.

If a couple of good keepers are placed behind the line of the butts with a clever retriever or two, all the birds should be picked up either on the same or the following day, but the ground must be carefully searched for the birds.

Protecting Grouse Nests

THE protection of grouse nests is one which concerns the moorland keeper, and any hint relating to this matter will be welcomed by him.

Pentland, in writing to the "Gamekeeper," gives the following practical hints :—

" It has been my experience that, however perseveringly one traps on a grouse moor, the appearance of eggs thereon leads to another appearance of a more deplorable character, this being every description of egg-eating feathered vermin, the worst being gulls and

crows. When a keeper has charge of a moor which is one of several lying close to each other, he may not have a great deal of trouble in the way described as every one of his neighbours will be busily engaged trapping and shooting the intruders ; but it is the keeper on a moor quite by himself, and especially if near the sea, who is deserving of sympathy. He has no neighbours to assist, and the eggs on his moor are an attraction for all feathered pests over a wide surrounding area, and for all the predatory gulls which throng the shores.

" If gulls and crows are observed flying over a moor backwards and forwards, a foot or two above the heather, there is no mistaking their intent, for they are searching for grouse eggs, and the loss will be great if they are not stopped. With the abundant fare which a well-stocked moor provides at the nesting season, it is no easy matter to trap these intruders, but the attempt should be made, although very much may not result.

" The black-backed gull appears to be the worst offender, the crow is the next, and all the larger gulls, are undoubtedly egg-destroyers. I have each season managed to kill a great many by getting out very early in the morning with a gun, and concealing myself among rocks and long heather. When the birds come sweeping over the ground they are generally searching it so intently that they get well within shot before scenting danger.

" If a bird is killed, do not rush out to secure it, for the report is certain to alarm others, and these may fly within reach. Should a gull be wounded it often

proves an opportunity of securing several, as sympathisers come swooping over it, and if the reader is careful to keep in hiding he may shoot quite a number of them. Shoot at everyone at all within reach, as a bird hit and not brought down often proves the best of warnings to the remainder. It may be remarked that this shooting is bad for the moor, but once the grouse have commenced to lay they are not easily disturbed or driven away.

" There is another precaution a moorland keeper may take, which will prove the means of saving many grouse nests from destruction by egg-eating birds. That it is not taken more often is owing to a mistaken idea that a grouse deserts its nest at the least provocation. The only time that it is risky to interfere with a nest is when it contains one or two eggs; later one may do almost anything except put the old bird off on too many occasions. Vermin rarely interfere with any but well filled nests, for it is the full clutch of eggs that attracts their attention, so readers will understand that it is not necessary to run the risk of interfering with a nest till there is little danger of the grouse deserting.

" The interference I suggest amounts to very little, but has wonderful result in preventing losses. Grouse are not clever at concealing their nests in every case, and it is the exposed ones that are destroyed.

" It is a simple matter to place round one at all exposed a few twigs of long heather, which will effectually prevent the eggs being seen by vermin flying over. These may be placed in position one or two at a time, at intervals of a day or so, and in the worst cases half

a dozen twigs are sufficient. Whatever is done, the owners' access to the nest must not be in the least impeded, or that will prove disastrous, and there must be room beneath for the bird to sit. It is most important, too, not to make these additions too conspicuous, as they easily may be on a carpet of short green heather. Often enough concealment may be provided by merely bending over a little of the adjacent growing heather.

"Grouse are, too, fond of nesting a few feet in the heather from a sheep track, and sheep do not invariably pass along these tracks in single file. An alarm occurs, a rush takes place, the sheep spread out on each side, and then the nest is in danger of being trampled under foot. I have found it advantageous to stop a sheep-track for a yard or two by a nest and divert it. This is easily accomplished by the aid of a rock or two, and some big tufts or sods of heather, and after these are in place a fresh track should be cut round.

"With a little experience the reader will soon learn how far he is able to take protective precautions without risk of provoking desertion, and even if an occasional nest is deserted with his knowledge little is lost, for the eggs may be divided amongst others before they become spoiled."

The Sand Grouse

INTRODUCTION.

THE genus *Syrrhaptes* constitutes a separate group of birds allied to those of the gallinaceous type, the

pigeons and the plovers, and yet quite distinct from these.

There are a number of species belonging to the family, but there is one species known as Pallas' Sand Grouse, which is an inhabitant of the deserts of North China, and that has occasionally visited Europe, including Great Britain, in considerable numbers.

One of the most distinctive features of the Sand Grouse is that the three toes are united together into a single pad, hence the generic name *Syrrhaptes*, which means "sewn together." The hind toe is wanting, the metatarsus (shank) is very short, and the three toes are covered with feathers. These birds nest in the ground, are strong fliers, and are inhabitants of the plains and deserts of Eurasia.

The primary wing feathers and those of the tail are long and pointed, but in most other respects the Sand Grouse bears resemblance to the Red Grouse.

Pallas' Sand Grouse

(*Syrrhaptes Paradoxus*)

IT was during 1863 that British game preservers and British ornithologists had the opportunity of becoming acquainted with this bird, as a migrant in considerable numbers, though in 1859 specimens were obtained in Norfolk, Kent, and Wales. The birds came over from Central Asia, crossed the North Sea, and reached our shores and those of Ireland.

A quarter of a century later another migration

occurred, and special legislative measures were brought into operation for their protection.

The Sand Grouse was first of all brought to the notice of ornithologists by a naturalist named Pallas, though his description was somewhat faulty, owing to the imperfect specimens which he had before him.

Colonel Prjevalsky says that the birds migrate from north to south, and that whilst on the wing they are very similar to the Golden Plover, only its whistle is quite different from that bird. This has been likened to the sound "chak-chak," "whirk-whirr," and "truck-turuk."

In the autumn the Sand Grouse is gregarious, and it is stated that in the winter flocks of these birds visit northern China, where they are captured by the natives.

The Sand Grouse is said to be a very rapid flier, and their migration takes place in thousands; but it has never been ascertained what is the reason for their intermittent incursions into Great Britain. There was a visitation of Pallas' Sand Grouse to Scotland in 1888, and some of the birds remained until the autumn of the following year. During their stay some of them both laid and hatched, the period of incubation occupying a month. The nest is made in the sand and three or four brownish-buff coloured eggs, with dark brown spots, are laid in it.

The plumage of the Sand Grouse is sandy, with black or brown bars. On the breast there is a circlet of black-edged feathers, and a larger area of black on the belly. The wings are long and pointed; so are the two central feathers on the tail.

Various seeds and grains comprise its food.

Although the foregoing is a brief description of the Sand Grouse, it is not in reality a British game bird, being, as previously stated, an irregular migrant.

Black Game or Black Grouse

(*Tetras Tetrix.*)

DURING recent years Black Game in the north has been distinctly on the decrease, whilst in many counties—especially in England—the birds have altogether disappeared. In Wales, the Midlands, and around Sandringham it is locally distributed. The black cock and his mate, the grey hen, resemble in many features the Red Grouse, being subject to the same diseases, to the same enemies, and to the adversities of prolonged drought, or the converse. As a sporting bird the Black Cock is, by sportsmen, usually regarded as inferior to the Red Grouse.

Like the pheasant, it is polygamous, but the Grey Hen seeks absolute seclusion from the male during the time that she is engaged in sitting.

On some Scottish moors the percentage of Black Game has increased, and this to the detriment of the Red Grouse, the stronger bird driving away the latter from its nesting ground, causing it to remove to higher and poorer land.

Black Game require a wide expanse of rough ground, their flights being long, so that any attempt to keep

it within the boundaries is well-nigh impossible.

The Black Cock is very fond of resting in the open, so that he is easily seen in contact with its surroundings. It has been stated that the Grey Hen does not breed every year, nidification being biennial, but the majority of observers seem to believe she goes to nest annually. As the nest is often near to a mountain stream, a proportion of nests and young birds must be destroyed, although the Grey Hen is a very close sitter.

She spends much more of her time upon the ground than the Black Cock, which latter is very fond of roosting in the trees, especially in the summer—July and August—but in moulting time it keeps more to the ground. It loves a very wild, broken country, close to birch and fir tree plantations, especially where swampy ground and mountain streams prevail.

According to one observant keeper Black Game will live for ten or fifteen years, the plumage of the male bird becoming finer in texture each season, and the feathers of the tail more curled.

Unlike the Red Grouse, Black Game endeavour to fly "upwind." In the autumn and winter the males associate in flocks of about a dozen, but as the breeding season approaches they break up. Like the Capercaillie is chooses "laking" places, where battles are lost and won. At this time the cock is in his most brilliant plumage, which he endeavours to display to the greatest advantage in order to attract the attention of the hen.

The love song, or "spel," is a ~~humming~~ note, which has been compared by Mr. Selby to the sound made



BLACK GAME.

when wetting a scythe—a combination of a hissing and a cooing sound. The hens respond to this call, and pair with the most chivalrous male birds. It is considered that one cock should be sufficient for five hens, but the Black Game do perfectly well when the two sexes are about equal.

The shooting season opens on August 20th, and closes on November 10th, but it would be better if the opening season began a month earlier and the closing deferred an equal length of time, as the young birds are not sufficiently advanced for shooting purposes. This early shooting is a most unsportsmanlike procedure.

In olden days it was the custom amongst sportsmen to shoot Black Game at the end of October and November. The open season might be extended with advantage to the 1st of February. The best way to shoot Black Cock is during a grouse drive at the end of September, or later on when the corries have been driven for odd game. If guns are posted at the end of a corry, the birds will come down in front of the beaters, and good shots are to be obtained. If the habits of Black Game are studied they can be stalked, but this necessitates an amount of both patience and of perseverance, the exercise of which every sportsman will not appreciate.

The presence of too many Grey Hens, especially barren ones, on an estate cannot be regarded as conducive to the increase of the Black Game, though there is no doubt the bulk of the hens suspected of being barren are merely those which have had their eggs or broods destroyed. Too many cock birds, as

in the case of pheasants, are bad for increase of stock.

Black Game live upon birch catkins, the buds of the willow, and alder, the young shoots of ling and heath, grain, and the fruits and berries of plants growing in the locality. The nest is placed upon the ground and contains from five to ten eggs, though sometimes more. It is usually found in a tuft of grass or low bushy shrub.

The food of the young birds consists of the seeds of a certain species of rush. They do not assume their full plumage till the autumn moult. The male bird is about twice the weight of the Grey Hen. If in good condition he will weigh a little over four pounds and measure nearly two feet in length. The beak is black in both Black Cock and Grey Hen. Over each eye there is a patch of bright scarlet skin, being much smaller in the hen.

The feathers of the head, neck, breast, back, and rump are all black, reflecting a steel blue from their surface. The legs and thighs are clothed with brown feathering, which extends to the toes, the latter having a web-like appearance. The tail of the Black Cock consists of sixteen black feathers, the central ones being tipped with white, but all the outer ones curl outwards, giving the tail its forked appearance, which is, however, only slightly forked in the Grey Hen.

The general colouring of the hen is a yellowish brown, speckled with black grey, whilst the tail feathers are also reddish brown.

Black Game will hybridise with allied species, such as the grouse, capercaillie, etc., also with the pheasant and ptarmigan, or possibly other birds.

Concerning the shooting of black game there is a most interesting contribution by Mr. Robert Osborne of Carradale, Aryllshire, which appeared in the "Game-keeper," in December, 1908, which we give *in extenso*.

"At the beginning of December most of the Black Game are down in the birch, as they feed at that time mostly on the seed of that tree, and at this time of the year the hills are very much disturbed by the shepherds, as they have to be after their sheep every day, which helps also to drive the birds down into the glens. As regards the glens, the narrower they are, and the higher the hills on each side, the easier it is to get Black Game, and the wider the valleys, with long sloped hills, the more difficult they are to drive, as old cocks when disturbed will fly straight across to the opposite side, perhaps a mile or two off, and, on a short December day, you cannot do very much, especially as in the afternoon, after they feed, they go away back to the top of the hills to roost. The best sport is in well-wooded narrow glens after the morning feed. If it is a fine day Black Game will be found on the sunny side high up the hill, or sitting on the birch trees, and as they see every movement all around, it is not easy to walk up to them, so the keeper has to resort to short drives. For the first time or two after being disturbed Black Game do not fly very far, but the moment the old cocks see that the keeper is determined on them, you will see them rise high up in the air, and make off for some other glen, perhaps one or two miles away. One way of getting old Black Cocks is to have a walk through the glens, and proceed the same as if you were

for shooting them, and have one to watch, if possible, the different clumps of birch and gulleys they make for oftenest, then the keeper will know the best place where to stand when he has to shoot them, that is if he comes when they are in the birch.

Black Game when disturbed generally fly from one side to the other of a glen, and then turn up and down as the case may be, so if the gun will wait on one side of the glen and the beater go up the other, they will cross over and go down under the gun. If there is a bend in the glen so much the better, as this is a good place for the gun to stand and get them when they are turning round. It is not an easy matter to pick out the old birds from the young when they are coming straight on to you, as they come at such a pace. There is no time to look much at them, for if you don't shoot them coming to you it is very few that will be killed after they pass ; but if they are shot with No. 4 or 5 shot very few will go away wounded. If there is time to have a good look at an old Black Cock, when he is coming to the gun, he is easily known, as his tail has the perfect hook, while the young bird's is straighter and they have still some of the brown showing on the wing."

" Another way to get Black Cock is for the gun to stand in some favourite gully, where they are sure to come to if disturbed, and then send the beater to rise them, when they will make for these places. In some gullies the gun can stalk them by keeping up the bottom of the burn, but it is not an eay matter shooting through the birch trees when they make out from the head of the gully. The best way is to get up as far



as possible, and then stand while the beater will go round them and come right over the top, when they will make straight down hill over the gun, or within shot on either side. If the gun were to stand at the foot of these glens, he would be the better of a rifle, as they would come over perhaps two hundred yards high. A few may be got another way, if the beater has a gun also. Let one gun keep up one side of the glen and the other the other side, and let them walk it to the top, and there is a chance of getting them when they are trying to get out of the road of one gun, flying into the face of the other ; but if the guns are more than three hundred yards apart, they might dip low down the bottom of the glen, between the guns. It might happen that you saw them light high up on the hill side, with a chance of stalking them from below. If so, leave the beater where they can see him, and then stalk pretty close to them. They will be so intent on watching the beater that you would get fairly close to them, but it is a very difficult shot on a steep hill, for before you can steady yourself they are well over your head (mostly always making straight out from the hill), but if you kill one there will not be much life in him when he strikes the ground. When they are feeding in the afternoon they are not easy to get, for they soon make for the hill tops. Two guns working in this way will kill more old cocks than four guns could working with a dozen beaters. It means hard walking, but when one gets some of the finest shots and the best of birds it amply repays the trouble taken."

The Capercaillie

(*Tetrae Urogallus*)

THE Wood Grouse, or Capercallie, is a magnificent bird, both in plumage and size; and when Great Britain and Ireland had their coverts more heavily timbered than at the present time these birds were much more abundant. It is the largest of our game birds, and fully-grown cocks weigh ten pounds or over, the hens being about half this weight. The former is about thirty-six inches in length, though sometimes a trifle more. In Sweden, where the pine and larch forests are plentiful, the Capercallie attains larger dimensions. It is of interest to note that the original stock became extinct in Ireland about 1760, and twenty years later saw its extinction too, in Scotland. In the latter country the Capercallie has been re-introduced and done well, their re-establishment dating from 1837, when Mr. Lloyd (author of "Field Sports in North Europe") sent over from Sweden, in charge of Larry Banville (then head keeper to Sir Thomas Powell Buxton, of Norfolk) thirteen cock and sixteen hen Capercaillies, which were placed in charge of the head keeper to Lord Breadalbane, one Mr. James Guthrie, at Taymouth Castle. The following year more birds were introduced into Norfolk, and in 1839 there were fifty-four adults birds on the estate. Mr. Guthrie estimated that the birds had bred so freely that he was able in 1863 to state that there were over 2,000 Capercaillies on the estate.

The first attempt to re-introduce the bird was done by Lord Fife, who in 1827 or 1828 had a pair brought

over from Sweden, but the hen bird succumbed.

A year later a second pair was imported, which again proved a failure. Subsequent attempts were made, but with equally unsatisfactory results.

During the last thirty years attempts have been made to introduce these birds into several English counties, though without any particular measure of success.

Extensive forests are requisite for its successful rearing, as it lives mainly upon the leaves of the pines and larches, and has a particular fondness for hiding amongst the branches, though the hen bird has more inclination to be on the ground than the male, the nest being made on the ground in a secluded situation, and in it she lays some six to twelve eggs of a pale reddish-brown, spotted with dark orange-brown markings. The period of incubation occupies twenty-eight or twenty-nine days. The resinous products contained in the herbage, on which the bird largely feeds, is responsible for the pungent taste of the flesh of the Capercaillie, hence the reason why it is not much sought after. Considerable quantities come into the market.

The food of the young birds consists mainly of insects, but later on of the seeds of the Juniper and other wild berries. In Winter the staple food mostly consists of the buds of the Scotch pine.

On many Highland estates, likewise in some of the southern counties of Scotland, the Wood Grouse is becoming more plentiful, but, as previously stated, large tracts of mountainous country are requisite for its successful preservation, provided that there is an abundance of pine trees.

The term "Wood Grouse" indicates the habits of

the Capercaillie, which are opposed to those of the Red Grouse, which leads its life in the open.

The call of the male bird is indicated by the word " pellar, pellar, pellar," frequently repeated, whilst that of the hen responds with a croaking sound, expressed by the word " goch, gock." The " laking " or " spel " ground, as it is called, harbours a number of these birds, and the male descends from his perch to the ground to join the female. It is during this period of courtship that advantage is taken to shoot the cock birds, which, being pre-occupied, are less readily disturbed by the intrusion of man.

The eggs may be hatched either in the incubator or under hens, and the chicks can be reared in a semi-domesticated manner, though they must be supplied with freshly-gathered twigs of the pine, juniper, etc., but during the first two or three weeks can be fed in the same manner as pheasant chicks. They must be given plenty of water, and kept dry.

In its native haunts the Capercaillie is a polygamous bird, consequently the excess of males—like those of the pheasant—should be shot off at the end of the season.

In many of their features these birds are allied to the Black Cock, and their eggs are often set under the Grey Hen (*i.e.* black grouse hen).

In winter they become gregarious, large flocks being seen in localities where they abound.

They roost in trees, have a powerful flight, though usually they fly but a short distance.

Being large birds they are easy to shoot, and the best method of shooting them is to post the guns on



THE CAPERCAILZIE.

the outside of the woods, when the birds will come over the tree-tops in rapid and powerful flight, but their size renders them an easy mark to the shooter.

It is stated that the Capercaillie is detrimental to pheasant preservation, owing to its pugnacious habits, but whether this is correct or not the writer is unable to say. It is tolerably certain that the growth of young forest trees is checked where these birds are very numerous.

The bill of this bird is horn-coloured, the tarsus and claws black and the thighs covered with grey feathers. There are eighteen tail feathers, all black, excepting those of the outside, which have white spots upon them. The irides are hazel-coloured, whilst there is a small scarlet bright patch over each eye. The throat feathers are black, and those on the head are speckled with greyish white on a brownish black ground. The breast is black with a dark green sheen at the upper part of it. The wings and wing coverts are dark brown with a light brown mottling. The under-wing coverts are white, and many of the feathers at the side of the body are tipped with white. The general symmetry is that of a well set up, powerful bird, capable of defending itself against its own natural enemies.

When young, both the sexes are almost alike, and it is not till the third year that the bird develops its full plumage. The female is smaller, and the markings on the featherings less clearly defined. The hen will cross well with the Black Cock, and the male hybrid thus produced is an extremely handsome bird. The female hybrid resembles the Grey Hen, but the fol-

lowing method of distinguishing is given by Olgilvie Grant in Vol. I. of his "Game Birds":—

"It is based upon the distinction between the middle tail and under tail coverts. In the Grey Hen the tail is forked, the outer feathers being much the longest, and the under tail coverts extend beyond the middle pair. The female Capercaillie has the tail rounded, the middle pair of feathers being much longer than the outer, and the under tail coverts do not extend almost to the end of the middle pair, while in the female hybrid, the tail is nearly square, the feathers being all about the same length, and the under tail coverts are much shorter than the middle pair.

Ptarmigan

(*Lagopus mutus vel Vulgaris*)

THE Ptarmigan, sometimes spoken of as the White Grouse, is one of the wildest British game birds, principally inhabiting the mountains in the Highlands, but it is not found in the Orkneys or Shetland Islands.

It is frequent in the Pyrenees, the Alps, the Urals, and Southern Siberia, Spitzbergen, and Nora Lemble, Iceland, and on the Rocky Mountains, so that this bird has a wide distribution. It is a bird that prefers the barren and stony parts of elevated ground. It is essentially a bird of high altitudes. At one time it used to be found in Wales, Ireland, Cumberland and

Westmorland, but in these places the bird has now practically become extinct.

One of the most interesting features in connection with the Ptarmigan relates to its plumage, which it is able to adjust according to the season of the year, in order to harmonize with its surroundings, thus affording the best degree of protection against its natural enemies. Its spring plumage is dark brown with yellowish brown mottling ; in autumn it is pale grey, with blackish spangling, whilst in winter it turns pure white. Being of skulking habits and leading most of its life upon the ground, such protection is necessary for it.

When the mountain sides are white with snow one may easily pass quite near to these birds without observing them. It is a strong and fast flying bird, but never uses its wings except under compulsion. It is very fond of perching on rocks, and seems to take a delight in the snow, especially during a burst of sunshine.

In many respects it resembles the Red Grouse, but its call is not so distinct, being more of a croaking nature. Macgillivray compares it to the croaking of a frog. In the winter the Ptarmigan obtains its food by burrowing under the snow, which consists of the green tops of the heather, and the ling seeds, bilberries, and a variety of other mountain herbage.

The male Ptarmigan helps to lead the young birds about, but does not assist in incubation, which latter occupies three weeks.

It is monogamous ; pairing takes place in the spring, the eggs usually being laid in May, generally towards

the latter end of it. The nest is of a very crude character, consisting merely of bits of grass, heather twigs, etc., which are placed in a slight depression of the ground. In winter the cock bird has a brownish black bill, with claws to match. The shafts of the side tail feathers are black, and there is a black streak extending from the bill, on a level with the eye, to a little behind the latter, but immediately above the eye there is a naked scarlet patch of skin. The rest of the plumage is white. In the female the black streak beyond the eye is absent, but in all other respects she is very similar to the male. In general build the Ptarmigan is a sturdy bird, hardy, but distinctly inferior to the Red Grouse, both as a sporting bird and for culinary purposes. In fact, it is only the young birds that are any use at all for food.

The Partridge

(*Perdix Cinerea.*)

THE genus *Perdix* is composed of about half-a-dozen species, but there is only one species indigenous to the British Isles, which is the Common or Grey Partridge.

All the true partridges are believed to be monogamous, and dwellers in open country, more especially when the land is highly cultivated.

Modern farming has increased the area of partridge cultivation in this respect, standing in strong contrast to that of the Great Bustard. They live entirely upon the ground, their food consisting of seeds of grasses, insects and their larvae. They do no material damage to the grain crops, hence the farmer rather encourages the preservation of partridges than otherwise, and they multiply in proportion to the cultivation of the land. Their nests are roughly constructed, and placed in a depression on the ground, lined with dry grass and leaves, and are found usually under the shelter of bushes. In it are laid from ten to twenty eggs, and, in exceptional circumstances, even more. The hen partridge is a close sitter, and incubates the eggs entirely, although the male bird acts as sentinel, at once warning his mate of any approach of danger. If the latter threatens it will squat close to the ground, and will not rise until the sense of danger becomes acute. When flushed it rises quickly, in rapid flight—its rounded wings producing a whirring sound. Pairing usually commences in February, and the hen goes to nest the end

of April or beginning of May, though in Scotland it is generally a few weeks later. The period of incubation is twenty-one days, and the young birds begin to run as soon as ever they are hatched, remaining with their parents till the pairing season to form coveys.

Sometimes larger coveys are formed by the union of several broods, and it is quite possible that where a large number of eggs have been discovered in a single nest, that these have been the product of two or more hens.

Although partridges like dry weather, they cannot stand prolonged drought, and the birds will resort to low ground, where there are streams and ditches during a prolonged dry season. To obviate this, drinking fountains or tubs should be placed in shady situations, and kept constantly replenished.

Exactly in the same manner that the partridge cannot thrive in prolonged dry weather, nests and eggs during a very wet season may be destroyed, more especially in the Fen lands. If the weather has been dry for two or three weeks, the birds will begin to nest low down in the ditches, instead of close to the top. When heavy rains follow, the result is that the water rises rapidly, and the nests and contents are washed away. To meet such an emergency, the gamekeeper should persuade the birds to lay to sham eggs, placed in nests artificially made on the tops of the banks of the ditches. The birds will soon take to them and lay therein, but not before the sham egg has been concealed by them, which may be accepted as positive evidence that they will soon begin to lay in the nest.

After half-a-dozen eggs have been laid the sham one can be removed, and the partridges allowed to continue nidification, *i.e.*, egg laying.

Eggs that have been spoiled by rain should be removed from the nests, so as to encourage the laying of a second batch of eggs, as autumn coveys of partridges are certainly to be preferred to no birds at all.

If the spoiled eggs are removed and a sham egg placed in each nest a second egg-laying will generally occur.

Where partridges are not constantly harassed by sportsmen they are inclined to become gregarious, during the fall of the year and winter, whilst in the latter season they are very fond of visiting rick-yards in search of food. At night-time each covey will resort to some particular spot for rest, and the birds generally sleep in a circular formation, so as to recognise the approach of danger. As stated in the chapter dealing with pheasants, partridges are subject to the same diseases, more especially gapes and enteric. The latter disease is of common occurrence in jackdaws and magpies, and may possibly be the starting-point of such an affection, as both birds are decided enemies of the partridge preserver, another frequent trouble is that of lice, and lousey birds never thrive.

In describing the adult male, we may mention that the bill is of a bluish white, whilst immediately behind the eye there is a small triangular patch of naked skin. The legs and feet are a bluish grey, and the claws brown. The neck and upper part of the breast are also bluish grey, with zig-zag lines closely arranged in the feathering. The back, rump, and upper tail coverts are brown,

with spots and markings of a chestnut brown. The tail feathers are reddish brown, and on the lower part of breast there is a chestnut coloured horseshoe patch.

The hen partridge differs but little from the male, but certain minor features distinguish her from the cock. For instance, the horse shoe mark is said not to be so distinct, but this is not a reliable guide always as to the distinction of the sexes. According to Ogilvie Grant, the most reliable means of distinguishing them is as follows :—

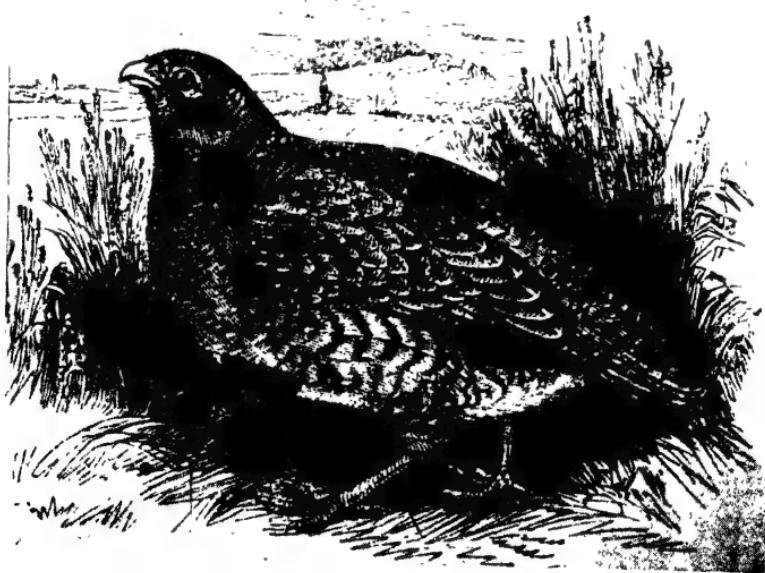
“ Excepting in very young birds in their first plumage, the difference lies in the markings of the lesser and median wings coverts and scapulars, the buff ‘ cross-bars’ in the female being an unmistakeable mark, and quite sufficient to distinguish her at a glance. In very rare exceptions barren females assume male plumage, that is the median wing coverts and scapulars are without the bar markings.”

Young birds have yellowish brown feet, but if severe weather occurs these usually change to bluish grey. Most keepers look upon the presence of a few chestnut spots on the middle of the lower breast as sufficient indication of its being a hen partridge.

Partridges can be successfully reared in confinement, and some keepers follow this system, though the majority are in favour of hatching under natural conditions, as birds reared under artificial conditions, even for the first few days of their lives, can hardly be expected to be gifted with the same degree of self-preservation as in the case of birds which have to look to their own preservation from the moment they are hatched.



WHITE GROUSE OR PTARMIGAN.



THE GREY PARTRIDGE.

As opinions are divided upon this matter, we deem it advisable to quote one or two contributions of practical interest, and in doing so desire to acknowledge our obligations to the proprietors of the "Game-keeper." The first refers to partridge rearing in France, by Beaurais, and is as follows:—

"On a pretty large space of ground, which should be wild and rough, with tufts of grass and bushes, pens should be constructed for each pair of partridges. These pens are round, about fourteen feet in diameter, and enclosed by wire netting forty inches high. All round the inner side the earth should be banked up in a way to prevent the birds injuring their heads if they try to escape through the meshes. The interior should contain a little bush or two, and tufts of rough grass, and the soil should, of course, be dry and well drained. Each pen is to contain a couple of partridges pinioned. There are several patterns of pinions in use. It is essential to see that the pair placed together agree, otherwise there will be no result. As the pairing season approaches the whole of the captive birds, both cocks and hens, must be pinioned and put together in a large enclosure, surrounded by wire netting about six feet six inches high. Within this enclosure nooks for flirting should be arranged, composed of planks of wood or faggots. The keeper or his wife should frequently stroll round the enclosures and try to capture the culprits. This is only to be done when they are seen in the act of pairing. Each pair thus captured is placed in a pen, when, if left quietly alone, they will make their nest. As soon as the little birds are hatched some special nourishment is given to

them, and a few days afterwards, if the weather is fine, the father and mother are put into a basket and their pinions removed. The young ones are also taken, but apart from their parents, so that they may not be injured, and the whole are then conveyed to the field where they are to be let loose. Here they are placed together in a small coop, the door of which must be made to open very easily, and noiselessly, by means of a long piece of string. They should then be left alone for some hours after scattering food around.

"Then the keeper should return, and with great care, and as little noise as possible, pull the string and release the parents and brood. The greatest care must be taken not to frighten the old birds, or they may fly away. The object is to induce them to leave the coop, and conceal themselves at once in the neighbouring grass. The coop may be removed the following day, and a little food should be scattered about for some days afterwards."

If the details as given are thoroughly carried out, Beauris maintains that at least 97 per cent. of partridge coveys will be obtained.

The Common Red-Legged Partridge

THE Common Red-Legged Partridge (*Lat Caccabis rufa*), French. or Hungarian Partridge, is a very handsome species, and appears to have been introduced into the south-eastern counties of Great Britain over a century ago.

It is stated that Charles II. introduced some of the

birds, and turned them on to the preserves at Windsor, though success did not attend his efforts, as the birds gradually died off. Subsequent importations occurred, and the Red-Legged Partridge, to some extent, became established in British game preserves, especially those in the eastern counties. As a game bird it is distinctly inferior to the Grey Partridge, where shooting over dogs is still practised, as it will not take to wing unless absolutely forced to do so, but since driving has come in, this species has become more popular, and it is now found on game preserves in various localities.

It is altogether a stouter built bird than the Grey, whilst its pugnacious habits, especially at pairing time, are somewhat against it, as it has a tendency to drive our own partridges out of the preserves ; hence the reason why some sportsmen absolutely refuse to have anything to do with it in preservation.

The predilection of the French partridge for using its legs in place of its wings is sometimes taken advantage of by poachers, chiefly, however, on arable land, when a thaw succeeds a frost, and the birds' legs become completely clogged, in which case numbers are captured in this manner. It has a partiality for dry sandy soil, whilst in Scotland and Ireland the climatic conditions do not appear favourable to its cultivation.

In addition to its skulking habits, it frequently perches on trees, hedges, and fences, and, like the guinea-fowl is constantly on the alert for danger.

Like the Grey Partridge, it is monogamous, and nidification (nesting) usually commences about the same time, *i.e.*, the latter end of March and the beginning of April.

The nest is rather slovenly built, and is often placed in very exposed situations, usually on the ground, but occasionally on the side of a stack. It consists of dried leaves, or other dried form of herbage, and the average number of eggs are from twelve to fifteen, sometimes more. There is only one brood during the season. The colour of the eggs is brownish yellow, speckled with dark markings. The pugnacious propensity of the Red-Legged Partridge sometimes leads it to destroy a brood of Grey Partridges. Therefore, where the latter birds flourish, it is inadvisable to introduce the red-legged species into a preserve.

Like our own partridge it lives in coveys, but if very numerous upon an estate its gregarious habits may be manifested. The total length of the male is a trifle over a foot, whilst the hen is about one inch less. The legs, the feet, likewise the beak, are bright red, the breast is grey and the belly a reddish buff. The outer tail feathers are chestnut. The throat is greyish white, surrounded by a black band. The upper part of the body is of a brownish olive. Beneath the black band of the throat there is a sprinkling of black feathers, whilst the ear coverts are also black. The feathers on the side of the body have broad bands of light red, with intervening areas of ashy-grey feathering. All the markings on the feathers are less distinct in the female, whilst the male is provided with a pair of blunt spurs. In general build the Red-Legged Partridge is a stouter made bird than the Grey Partridge, though its flesh is regarded as wanting in delicacy of texture as compared to that of the latter bird.

Although handsome in appearance, these birds never



GREY PARTRIDGES.

command the same prices in the market as the Grey Partridge.

Partridge Driving

THE shooting of driven partridges is now a form of sport that has almost exterminated the shooting over dogs, though it cannot be successfully carried out on every estate. If the estate is adapted for partridge driving, and there is an abundance of birds, the best of sport can be obtained.

Partridge driving is necessarily attended with a good deal more forethought than that of grouse because of cultural operations, which does not apply in the case of the latter birds.

To be successful the head keeper must arrange all his plans beforehand, making provision for alternate drives in the event of the direction of the wind changing.

It is only by a careful attention to the multifarious details that satisfactory shooting can be had under this system. Beaters and butts play a prominent part, though the latter less so than on grouse moors when the birds are driven. Partridge driving is singularly successful on some estates, whereas, on others, it is less so, in spite of all precautionary measures to ensure successful results.

Butts should be erected previous to the day fixed for the shoot at the opening of the season, and the various drives plainly mapped out, so that there will be no confusion when the shooting party arrives. The

natural formation of the ground may be favourable or otherwise towards good driving. If the hedges are between four and five feet in height, and have plenty of heart in them, so as to afford good cover to the game, these will do very well as substitutes for artificially made butts, which latter should correspond with the surroundings. Ordinary hurdles or wire netting, with gorse and branches, will do very well for the erection of butts, and it is, as a rule, better to have the latter clear of the fences—not less than thirty or forty yards from the latter—though a good deal will depend upon circumstances. The butts should be five or six feet high.

Driving should commence about nine o'clock, or shortly afterwards, but not continued later than four p.m. or thereabouts. It is better to leave off a little earlier than later, as doing so will allow the rest of the birds more time to settle down after so much alarm.

The number of drives each day will vary, but the average is from six to twelve, though this greatly depends upon a variety of conditions. From eight to ten drives a day is sufficient for most sportsmen.

Retrievers or spaniels will be required for picking up the birds, and keepers, handling the dogs, should mark down birds which are killed, also any runners. Reliable beaters must be previously engaged, the hour of meeting, etc., arranged, so that there will be no confusion. Smocks, caps, and flags will have to be doled out to them at the appointed time. If there are root crops in front of the butts, so much the better, both for the drives and for the birds. The drives should take the direction of the furrows, no matter whether single or

double. The first drive should be "down the wind," and the beaters are preferably arranged in the form of a crescent, the wings of the crescent being well strengthened. It is a good plan to mark out the places where the guns are to stand, namely, where the butts are to be placed, by poles five or six feet high, with the number attached for each gun. The butts should be about forty yards apart. If the wind is across the drive, it will be possible for the flankers of the crescent on the side to which the wind blows to be well forward, and use their flags if the birds attempt to break back. A great deal will depend upon the manner in which the head keeper handles his line of beaters. They must be marshalled with discretion, and taught not to act on their own initiative. In other words beaters must do the work and the keepers do the thinking. An over-zealous beater may do much towards spoiling a day's sport. The drivers or beaters should have different coloured flags to those of the staff of keepers, as this at once enables the head keeper to distinguish his own men from the drivers, with its attendant advantages. From twenty to thirty men, including keepers, will be required for a drive.

In signalling the start of a drive, the head keeper should have a whistle or a horn, and directly one drive is finished, a move should be made to the next, which movement should be carried out as quietly as possible, otherwise the birds will be disturbed, and the sport interfered with.

The head keeper is responsible to the master and his master's shooting guests for a good day's sport, and it is his duty to see that all details of a preliminary

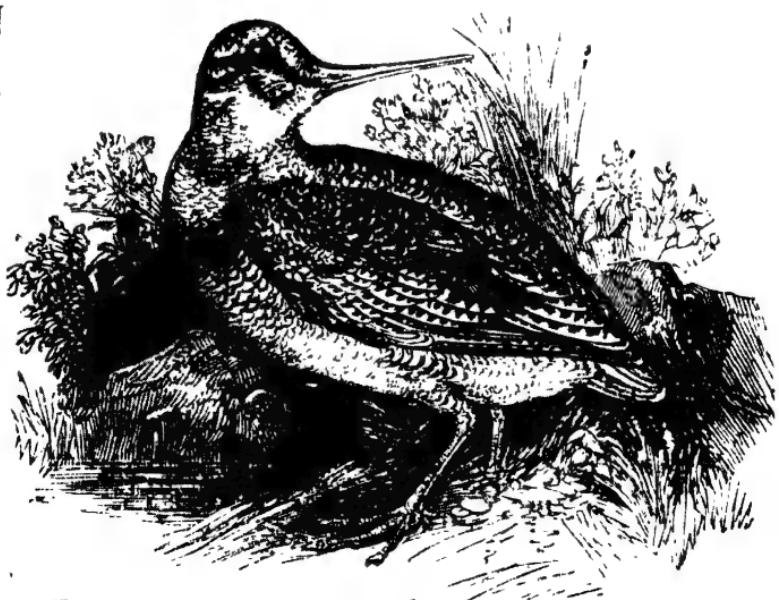
nature are duly executed, such as the loaders, drivers, stands for the guns, the marker, ammunition, intellectual dogs and the proper care of the kill, are individually and collectively attended to.

If it is a wet day the sooner the killed birds are put under cover the better, whereas if it is a warm day they should be allowed to cool before being stored in the game larder.

In conclusion it is necessary to mention that, on some estates, two sets of drives may be organised on the same day, which will necessitate a double set of beaters.



THE RED-LEGGED PARTRIDGE.



THE WOODCOCK.

The Woodcock

(*Scolopax Rusticula*)

PRELIMINARY REMARKS.

THE genus *Scolopax* is composed of four species of Woodcocks, one being common to the British Isles, two others being distributed over the Palaearctic and Oriental regions, whilst the other is confined to the Ne-arctic.

The bill is long and straight, the wings rounded. They are all birds of powerful and rapid flight, though fond of skulking in cover. They feed chiefly at night. Their food consists of worms, insects and their larvae. They nest upon the ground, and take very little pains to conceal their nest, though protection is afforded by the colouring of the eggs and the sitting bird. Two broods are usually reared in a season.

According to Dixon only one brood is reared, but St. John says it is double brooded in Scotland, and Hume says the same in India. When the second brood is able to take care of itself, the old birds moult, and in this condition endeavour to conceal themselves. Eyes large and round. In addition to the prominence of the eyes, these organs are situated very far back in the head, and the Woodcock has the peculiar habit of following any intruder with its eye. The Woodcock delights to dwell in woodland swamps. They are very sharp on the wing, though of shy and solitary habits.

Scolopax Rusticula, or the Common Woodcock, is a local resident in the British Islands, where it breeds sparingly, although in Ireland these birds are fairly

plentiful, and would be more numerous were it not for the egg-eating birds, such as magpies, etc., which are very abundant. On ground where woodcocks are carefully preserved the birds will increase year by year, and if *discriminate* early, and late shooting is indulged in, good sport can be obtained. It is a difficult matter to distinguish a woodcock from its surroundings in the autumn, as the mottled feathering so completely harmonises with decayed leaves and brushwood.

The young birds are very late in attaining their power of flight, and, no doubt, many of them succumb before they acquire full use of their wings.

The cock and hen are much alike in plumage. Nevertheless, it is an important matter to distinguish the sexes.

The accompanying illustration, which has been reproduced by the kindness of the proprietors of the "Gamekeeper," serves to illustrate one method of distinguishing the sexes by means of feathers from each of the wings. Four feathers are shown, each being the primary or first feather visible when the wing is folded. The narrow webs of two are marked with oblique bars of dark brown, whereas the other two webs are white. The barred feathers are regarded as indicative of the male bird, though authorities assert that this is not a reliable method of distinction. Why it should not be so is not clear, because the markings on the wing coverts in the hen partridge afford the best means of distinguishing the sexes. *

It is claimed that old "cock" are destitute of the bars on the feathers illustrated. Proof of the sex can only be attained by dissection.

In the North of Ireland hundreds of Woodcocks breed every year, and nesting usually commences in March.

Many of the Woodcocks bred in Ireland are believed to be those that migrate into Wales and the West of England.

R.T., writing in the "Gamekeeper," on Feb., 1903, has the following remarks :—

" This is a bird the habits of which every one has not an opportunity of studying, as on some estates they are almost unknown. The feeding place preferred by the 'cock' is a rich loamy soil, where it finds plenty of food. On passing a piece of ground of this sort which 'cock' frequent, one may notice that it is bored all over with little holes. This is done by the 'cock' when feeding. As for cover, Woodcock are very fond of birch and larch, if not too thick ; but their favourite bush in stormy weather is the laurel (likewise the rhododendron).

" If 'cock' are about during a storm they keep to the low ground, but as soon as the weather clears they go to more open country, and may be found amongst the heather.

" In this country (*i.e.*, North of Ireland) 'cock' are plentiful, and hundreds breed every year. Usually four or five eggs are found in the nest, which is merely a little hole in the ground and is quite open. The period of incubation is twenty-one days, the male bird being very active while the hen is sitting. In many cases they breed twice a year, and the young ones leave the nest as soon as hatched and dry, but may be found, for a long time, quite near the place, if not disturbed.

" Many people believe the Woodcock carry their

young, but I have never seen them do this. I have frequently put them off their young ones and away they would go, legs hanging, also tail down, and in five minutes they would be back again.

" All home-bred birds go away, but *where* I cannot say. One year an experiment was tried here. About 150 young Woodcock were got before they could fly, and rings were put on their legs, just to see if they stopped in the country. Strange to say, although over 400 were killed on the place the same season, not one with a ring was got or ever heard of.

" Generally the birds go away in July, and the first flight back again is the second week in November. In summer time when 'cock' are flying about they make a noise just like a croak. They are great birds to run when wounded, and I have picked them up 100 yards from where they fell., and have seen them run into a hole from which they have had to be dug out.

" I have often heard gentlemen who were not accustomed to Woodcock shooting, when a bird could not be got at, say, ' Oh, the 'cock' must be there, for the birds never run,' but they always went away a little wiser with regard to Woodcock running.

" Woodcock make excellent shooting, and keep everyone in a first-rate humour."

It is stated that more Woodcock are breeding in Scotland, especially on the western side, and in the Highland counties than formerly, and that the foreign birds are easily known by their fine, rich yellow plumage, and their plump condition. In Argyllshire the best flights of Woodcocks are seen from the middle of November to the end of December.

Hatching, in one instance, occurred as late as the 30th of July, and in another on the 28th of February.

It is in the rocky, heather-covered land, at the bottom of a mountain side, along which a shallow stream trickles, amongst the dead fern-fronds, that the Woodcock is most at home.

Both immediately before the return migration, and on arrival in the British Islands, Woodcock are very poor in flesh. The lighthouses account for the death of many, whilst boisterous weather must also play havoc amongst them. The Woodcock is a solitary bird, and very shy and retiring in its habits, so much so that the arrival of a number of Woodcocks simultaneously would appear to be due to the birds having had to wait for favourable weather on the seaboard, and is not to be set down to their gregarious habits.

Concerning the feeding of the young birds, which are helpless, it is stated that they are carried down to the feeding ground at night by their parents. Mr. C. St. John states that he has seen them carrying their young with them in the evening.

The bill of the Woodcock is dark brown at the tip, but towards the base is a lighter brown, whilst its length is about three inches. The legs are short, flesh-coloured and feathered to the knees. The front of the neck, the breast, and the belly a yellowish brown, with transverse bars of a darker brown. The irides are dark brown, corresponding to the colouring of the upper part of the body, which latter is arranged in the form of bars, spots and sheaths, giving the back of the wings a very rich colouration. The tail is made up of twelve black feathers, tipped with grey and white.

It is stated that the hen bird is larger than the cock, and will weigh from 14 to 15 ounces.

Although a considerable amount of literature concerning the Woodcock has appeared, there is plenty of scope for future study concerning this splendid game bird, which it is the ambition of every sportsman to shoot.

The Quails

INTRODUCTORY REMARKS.

THE genus *Coturnix* consists of about six species, but the migratory Quail is the only one of any particular interest so far as the British game birds are concerned, the flesh being highly esteemed by the epicure.

Quails chiefly dwell in the open country, living upon insects and grain, hence their partiality for cultivated land. They are small birds, that nest upon the ground, lay numerous eggs, and may be either polygamous or monogamous, *i.e.*, mate with several or with one hen. Incubation occupies about eighteen days, the eggs being laid in June or July, and there is usually but one brood reared in a single season.

All the species of the genus *Coturnix* are small birds, with a short, stout bill. They have three toes in front and one behind.

Large quantities of Quails are sold in the London markets, these birds being caught during the migration period, coming from Africa, across the Mediterranean into Europe in great flocks.

The Quail

• (*Coturnix Communis.*)

THE Common Quail is said to arrive in the British Isles in May, so that it is a late summer migrant. The

return migration occurs in the autumn, usually about October. It is stated that they perform their flights by moonlight or early in the morning, resting during the day. It is distributed over Europe, part of Asia, and Africa. The male is said to be very pugnacious in its habits. Extraordinary slaughter is effected during their migration in the countries on the Mediterranean.

Like the Snipe's, the Quail's habits are of a skulking nature, and the only evidence of its existence in a district is denoted by its peculiar call, expressed by the word "click-a-lick." It is a low-flying bird, and has a preference for running in the grass, like the Corn-crake. They are said to be very abundant in India, where as many as fifty or sixty brace may be bagged in an afternoon.

The Quail is a quick flying bird, though, as previously mentioned, it prefers running in the herbage to flying, and when it does rise, its flight is always low.

The Common Quail visits Persia, Afghanistan, Siberia, and the North Island of Japan in summer, and other countries, such as Burmah, China, etc., being influenced by their food supplies. The feeding time of the Quail is early in the morning, and late in the evening, and their food consists of seeds, various weeds and slugs.

The male is about eight inches in length, and the female a trifle less.

The plumage is soft. The colours are so intermingled, and there is such great variety of shading, that it is impossible to describe it satisfactorily. The bill is short and pointed, greyish brown in colour. The legs and feet are a greyish yellow. On the throat



HAUNT OF THE WOODCOCK.



A SITTING WOODCOCK

there is a dusky brown band, beneath which is a double-crescent of brownish black.

The middle of the breast and the belly is a creamy white, and so are the lower tail feathers. The average weight of the quail is about $3\frac{1}{2}$ ounces, and the young birds resemble the female, which latter is without the semi-circular dark marks on the neck ; so also is the male until two years old.

On some game preserves Quails have been turned down, in the hope that they would remain and breed, but, alas ! the birds were never seen any more. There does not seem to be any prospect of the preservation of the Quail as a resident in Great Britain, although there is no difficulty in importing the birds alive from North Africa. Many years ago it was not an uncommon occurrence for Quails to be bagged during a shoot, but it is not often that happens in the present day. This is to be regretted, as it is a bird capable of affording good sport.

The Dotterel

(*Charadrius Morinellus.*)

The Dotterel is chiefly found in England, during the Spring and Autumn, but Scotland is the principal place in Britain to find the Dotterel, as it breeds in Dumfrieshire, Rossshire, Inverness, and in North Perthshire; but it is a rare bird in the West of Scotland.

Being a late emigrant, this bird does not reach the British Isles before the latter part of April. It is a bird that is very fond of wandering about rough mountain sides and barren pastures, and the eggs are seldom laid before the end of May, the nest being similar to that of the Lapwing. The Dotterel is about 9 inches in length. It is gregarious at all times.

Snipes

THE Great Snipe and the Common Snipe belong to the genus *Gallinago*, in which there are twenty-two species and sub-species ; but only two species are British, whilst only one of these breeds in the British Islands.

Although most sportsmen are familiar with the more general characteristics of the Snipe, it is advisable for us to give a few of the distinguishing marks of this genus. They are all fond of inhabiting marshy and swampy ground, in fact, are almost exclusively confined to such, from which they obtain their living.

The long beak is very striking, and, being endowed with tactile filaments, enables the bird to probe beneath the surface for the worms and larvae of aquatic insects, upon which it subsists, in addition to minute particles of herbage.

The Snipes are monogamous, and obtain their food both during the day and night, though their nocturnal habits are particularly manifest.

Excepting during the breeding season they lead a solitary existence, and any tendency towards gregariousness is only manifested during migration.

Both the summer and the winter plumage are practically, the same. The forehead and the crown of the head are dark brown, divided in the centre by a streak of pale brown, whilst from the beak to the eye there is a streak of dark brown. The breast and sides are a yellowish white, marked with crescent-shaped bands of black.

The upper part of the body is brown, with blackish brown markings, whilst the wing coverts are brownish black, with yellowish white edgings. There is, however, such a variety of shading in the feathers of the Snipe that it is impossible to convey anything like a full and accurate description.

In Ireland, during the breeding season of the Snipe, rooks are very prevalent on Irish bogs, and these pests, not only destroy large quantities of eggs, but eat the young Snipes as well.

Irish keepers have the privilege of laying down poison, and they find that the best method of destroying rooks is to drill a hole into hen eggs, abstract some of the white, and put in a quantity of strychnine, adopting the precaution of putting a piece of stamp paper over the hole and writing in red ink the word "Poison."

The Great Snipe

(Gallinago Major.)

THE Great Snipe is an accidental visitor to the British Isles, and its presence is probably due to its being swept out of its course during migration.

In Scotland it is rare, whilst in Ireland it is considered to be rarer still.

Its breeding grounds are in Norway and Sweden, where it arrives some time in May. Migration is said to take place at night. It crosses the Mediterranean in the months of March and April.



FRENCH PARTRIDGE.

Like the other Snipes, it occurs singly or in pairs, but in the migratory season its gregarious affinities are noticeable.

Concerning the geographical distribution of the bird, it is found, in addition to the countries named, in Holland, Denmark, Poland, North Germany, Scandinavia, and Russia, in which it breeds frequently. Its chief haunts are the margins and lakes, where it skulks amongst the hedges, grass, etc., feeding principally at night.

When flushed it makes a whurring sound like that of the Common Snipe. The nest consists of a slight depression in the ground, with some dried grass, etc., in it. Four eggs are laid in this nest, some time in May, or else June, and incubation occupies about eighteen days.

The Great Snipe is nearly a foot in length.

Jack Snipe

(*Limnocryptes Gallinula.*)

THIS is a very small variety of snipe, less prevalent than the Common Snipe, seldom weighing more than $2\frac{1}{2}$ ounces. Nevertheless as an edible bird, likewise for sport, it ranks parallel with the Common Snipe.

It is a winter visitor, and is locally distributed throughout the British Islands, extending to the Shetlands and the Hebrides.

The majority of these birds make their appearance about October and November.

The Jack Snipe is the only representative of the genus *Limnocryptes*. It closely resembles the other snipes in its habits, plumage, etc. The chief distinction is that it has only twelve feathers in its tail, whereas the other snipes have fourteen or more. A more scientific distinction, however, exists in the anatomy of the bird. It has four notches in the posterior margin of the *sternum* or breast bone, whilst the others have only two notches.

The Jack Snipe usually makes the return migration in March, but whether such migration occurs in flocks does not seem to have been determined. Like the other snipes, when it is flushed its flight is, at first, a zig-zag one, then straight, which is, of course, the time to shoot them.

Concerning the habits of these birds Charles Dixon, in his work of "Game Birds and Wild Fowl," has the following :—

"Birds that breed in the highest Arctic limits of the European range of this species do not appear to pass our islands at all; those that winter with us breed in Scandinavia most probably; those that pass later in spring nest in Northern Russia. Jack Snipe arrive in India, as a rule, at the end of September, or early in October, and leave later than the Common Snipe in April and May."

These snipes love a quiet corner, and, if there is sufficient food, will stay in such throughout the winter, provided they are undisturbed.

Concerning the breeding habits of these birds there

is very little information, of a reliable character, and it is quite an easy matter to confuse the eggs of the Jack Snipe, with those of the other snipes.

The Common Snipe

(*Gallinago Scolopacina*.)

THIS bird is a common resident in the British Isles, being particularly numerous in Ireland. It is likewise common in Scotland, but wherever boggy or marshy land is prevalent, the snipe is almost sure to be found. In cold weather it is more abundant, as the birds during such times come from higher altitudes. Although found in the British Isles throughout the year, the Common Snipe is migratory elsewhere, *e.g.*, in Denmark, Germany, etc.

In its habits it is distinctly nocturnal, feeding on the fens between sunset and sunrise. It is during the night time that it migrates, and it is seldom that this bird is seen upon the wing, excepting when it is "put up."

Where sedges, rushes, and swampy ground abound, there the Common Snipe is most likely to be met with. Mud flats and bare sands are not the haunts of this snipe. The banks of shallow streams and around pools are the favourite homes of these birds. According to Hume, during the winter in India, the Common Snipe is found in every swamp and marsh, on the banks of rivers, ponds and lakes, wherever the foreshore is mud protected by short grass, rushes, or reeds. In excep-

tional instances it perches in a tree, a remark that does not exempt any bird from following suit on occasion. In its habits it is usual to regard it as a solitary bird, and if snipes are abundant on any particular ground, rising, as it were, in a flock, they will scatter immediately, thus ensuring their safety.

The principal food of these birds consists of grubs, worms, water snails, aquatic insects, etc., and most of this food is obtained by probing with their sensitive bill, which is endowed with thread-like nerves, rendering this prehensile organ highly sensitive.

The breeding season usually commences about the end of March, and extends through April and May, but in colder climates nidification is later.

In the pairing season, the male snipe careers about high in the air, producing a drumming, or bleating sound, particularly audible in the evening. The cause of this sound has given rise to a good deal of discussion as to whether it is produced by the wings or by the tail, or merely a vocal sound. According to Colonel Legge, it is produced by the combined action of the wings and tail. Owing to the sound thus produced, the Common Snipe is sometimes spoken of as the "Feather Bleater." When a snipe is "sprung," a sound is heard, which has been compared to the word "chissick," which may be accepted as a note of alarm.

The nest is a very simple structure, and usually situated under a tuft of grass or sedge.

It consists of a slight depression, containing a little dried grass or similar material. In this structure the hen usually lays four eggs, more rarely five, the colour of the eggs being pale greenish yellow, spotted and



THE QUAIL.



THE SNIPE.

blotched at one end, with rich dark brown markings. The hen sits from sixteen to twenty days, and only one brood is reared in a year.

As every sportsman knows, snipe shooting constitutes one of the best forms of sport, and is keenly sought after. There is not the least doubt that Ireland is the best place to go to obtain such, and no difficulty should be experienced in getting good snipe shooting if the sportsman goes the right way about it.

Considerable difference of opinion exists as to whether it is better to shoot snipe "down wind" or "against the wind," but an experienced sportsman expresses the following views concerning this matter:—

Snipe Shooting

~~On~~ the above subject a rifleman in Ireland gives the following hints:—

" This game little bird is considered by most sportsmen the hardest to kill, when compared with other winged creatures. It is an undoubted fact that few sportsmen are good snipe shots, even in this island, which possesses the best snipe ground in the United Kingdom. Snipe shooting is a sport that requires keenness throughout the day, and some amount of endurance, for the bird is only to be found in any numbers in the wettest bogs and marshes. Wet feet and legs are always expected, and, if one is not very careful, a wet jacket, for Irish bogs are very treacherous.

If the sportsman does not mind these hardships he may have some of the prettiest shooting extant. I say 'pretty shooting.' for if you watch a good shot grassing snipe you would say the same.

" Such a man is merely shooting in a simple natural style, quick and steady. Not one in four find it easy when they try it, though it looks easy, but this is their own fault. A great many get nervous owing to the sharp rise and erratic behaviour of the bird, which causes them to shoot wildly and erratically also. Others are too slow, following the bird in its evolutions with the barrel of the gun, cramped in an unnatural position, and then shooting when the bird is out of range.

" Because a man is a good shot at driven game, it does not follow that he will be a good snipe shot, and quite the contrary is often the case.

" Yet the snipe is a fairly easy bird to kill, if sportsmen would only study the way it rises in various kinds of weather, or accept a little proffered advice from the keeper, for instance, which young sportsmen are prone not to do, and make themselves look foolish in consequence.

" I have a good deal of snipe shooting to do, and ammunition being a consideration with me, as with most keepers, I have naturally closely observed the behaviour of this bird in most weathers. The stronger the wind the better the sport. I find that in *walking up wind* the bird, on rising, will face it, its *flight* being more unsteady than usual, it rising higher in the air at the same time.

" On placing the wind at *my back*, I find its flight

very quick, low and steady, which calls for very quick shooting.

"When the wind is on my *right or left shoulder* I find I get on better, for the bird, on rising, will fly straight from you; a strong side wind also keeps it steady, and after going a short distance it will (eight times out of ten) turn sharp and face the wind, showing the white of its wing in doing so, and offer a beautiful clean shot.

"On a *calm day* snipe are hard to approach, and are very unsteady, difficult shooting and at long range being the result. It is the sharp rise and erratic flight of the snipe that causes so many misses, for, like that of all other winged game, it is steady shooting that makes the heaviest bag. To grass a brace of snipe with the right and the left, is the wish of most, but few can accomplish it.

When the young sportsman does so for the first time, he marks it down as a red letter day.

"There is one thing I would impress upon the beginner, *never lose your nerve, but keep cool and confident. Be quick, but steady*, and comfort yourself with remembering that the finest shots cannot kill every time. The snipe is the one game bird above all others, and a man must keep his nerve and temper under control if he would be a successful snipe shot."

Mr. W. Coap Oats, in writing to the "Gamekeeper," makes the following valuable remarks concerning snipe shooting, which sportsmen will be sure to read with interest:—

"Of all months, November is *the* month for snipe. On most shootings where snipe abound, the first influx

of foreign-bred snipe will arrive during this month, and it is easy to pick them out from the home-bred birds ; the latter are big and heavy, and their plumage is in good condition ; whereas the reverse is the case with the foreigners, which are thin, and their white breasts show signs of dirt upon them. Given four or five days, however, in peace and quiet on the ground which they have selected, a great change will be noticeable. They will be plump and bright coloured in their plumage, and will have lost the dark, ugly look, which is so apparent on their first arrival. Do not be in too great a hurry to shoot them when they first come in ; give them time to settle down, and above all, choose a suitable day. Now, from a climatic point of view, what *is* a suitable day for snipe shooting ? I believe in a soft, muggy day, with good light, but no sun, and with a soft steady wind blowing. Snipe are always wild if the weather has interfered with their feeding, and are invariably wild in stormy weather, or just before a change.

“ In discussing the best method for walking up snipe, I realise that many may differ from me, though my opinion is formed on wide experience in many parts of the British Isles. In most parts of Ireland one would prefer a good steady setter, Irish for choice, as I think they are hardier. In that country birds are frequently long distances apart, and, as the extent of ground is great, and the cover good, it is obviously an advantage to have a steady dog, as the amount of ground tried is so much greater. Snipe are so capricious that frequently for no reason which we can understand, they desert favourite stretches of country

for a time, and we occasionally find bits of ground, usually not favoured by the birds, full of them. This, of course, is due to plenty in the supply of food or the reverse, and as we cannot probe beneath the surface like a snipe, were are always, to a certain extent, in ignorance as to exactly which spots will suit birds best, though sportsmen of experinece in the locality in which they are shooting can usually make a shrewd guess.

"In parts of Scotland the same methods can be applied, though for some reason dogs are not so much used for snipe as in Ireland, probably because working for snipe causes many dogs to potter, though I cannot say I have ever noticed this propensity amongst really first-class Irish setters. In England one generally walks snipe up, and now comes the next question, ought they to be walked 'down wind,' 'up wind,' or 'across wind.' Birds flushed when walking up wind fly low, and 'corkscrew' badly ; they are difficult to ~~see~~ and shoot, and this plan is only to be recommended when birds are wild or when owing to the lie of the ground, it cannot be helped. Many sportsmen swear by the down wind method, and I fully admit that where there is plenty of cover, when birds are rarely shot, or early in the season, it often answers well, but one must be alone, or with a friend with whom one often shoots snipe, and a dog absolutely under control. The main argument in favour of walking down wind is the statement that snipe always rise 'up wind,' and for a moment before they turn 'down wind,' are practically sationary, and offer an eay shot. But do snipe always rise up wind? I think not. As the

season advances the birds become wilder, and I have observed that many snipe rise and fly down wind. This is very noticeable with birds on bare ground with little cover. I think if birds see you coming they frequently rise down wind. Walking across the wind is the way to shoot snipe.

"If this plan is pursued, birds, in my experience, always rise into the wind and provide a cross shot, always the easiest at snipe, and one knows how many long cross shots are brought off in the year.

"By this plan, too, the wind does not blow 'the sound of your coming,' or your scent to the birds. Irishmen are usually good snipe shots, and many of the best which I have known prefer this plan.

"My advice is therefore: *Shoot snipe alone. If with a friend, don't talk*, and bring a dog which does not want talking to. Wear a thin coat which fits perfectly, and *shoot quick*. Do not potter, even if shooting badly."

The Great Bustard

(*Otis Tarda.*)

IN olden times the Great Bustard would appear to have been generally distributed throughout the country, but with the increased cultivation of the land the Bustard has gradually been driven from British soil. It used to be a local resident in Great Britain, though it is about fifty years since the bird bred in this country. It is said to have disappeared from Wiltshire about 1810, Yorks and Lincs 1826, and from Norfolk about 1838.

Spasmodic invasions of the Great Bustard into the British Isles from time to time occur ; and it is a great pity when these birds are shot, although there is very little likelihood of its re-establishing itself as indigenous to our Islands.

In Italy, Spain, Russia, Denmark, Germany and Turkey the Great Bustard breeds. Its favourite haunts are the plains and steppes of Europe and Asia, in which continents there are vast extents of bare ground. In the winter the male birds are gregarious, though the Bustard must be described as a solitary bird. It is regarded as a polygamous. It lives upon the ground, and the food which it obtains comprises green corn, clover, and various kinds of grains and seeds.

It nests on the ground, and two or three eggs are laid, incubation being carried on by the hen alone. An adult male bird will measure over three feet in length, and weigh upwards of thirty pounds.

The chief distinction between the male and female is that the former has whiskers, which the latter is destitute of. In Scotland and Ireland, the Great Bustard seems to have been uncommon, even before the extension of the cultivated area.

In some respects the bird resembles the goose, though it is higher on the leg and more shapely in general build. It is a swift runner, and does not take to wing unless alarmed.

The male bird has a pouch which begins under the tongue, and extends down the neck. This reservoir will hold several quarts of fluid. It is, however, absent in the female. The flesh of the Bustard is considered to be very good, but upon this point we have had no personal experience. The head and neck are grey, and there is a fringe of feathers springing from the chin. The bill is greyish white, and the upper part of the breast a pale orange, whilst the belly and under tail coverts are white.

The upper part of the body is a reddish brown, barred with black. The greater wing coverts are white, and the legs blackish.

It is a long-necked bird, and admirably adapted for swift progression on the ground.



THE JACK SNipe.



THE GREEN PLOVER.

The Golden Plover

(*Charadrius Pluvialis.*)

THE genus *Charadrius* contains three species. One of these, the Golden Plover, being resident in the British Isles. They love to dwell on the mountains, on plains, and around the sea coast.

Its flight is rapid and prolonged, though they are very fond of running and walking along the ground, upon which the hen nests, depositing four spotted eggs therein. The Golden Plover is a handsome bird, and breeds freely in England and Wales, being generally distributed throughout Scotland and Ireland.

The chief breeding grounds are the Norwegian Fells, likewise the Faroe Islands and Iceland.

It has the peculiarity, like many other birds, of inhabitating moors and mountain heaths in summer, whilst in winter it exists on lowland marshes and mud banks near the coast.

Vast flocks of Golden Plovers may be seen at the Wash, having migrated from the Continent. In spring and summer the birds are found in pairs, but in the autumn large flocks are formed which, to pass the winter, migrate to the south and the sea shore. At times enormous numbers are killed by wild fowlers.

A peculiar feature of the Golden Plover during flight is the V shaped, or triangle formation, which is not preserved if the birds are frightened.

The food of the Golden Plover consists of worms, snails, beetles and other insects, but a great deal of their nutriment is obtained on the mud flats during

moonlight nights, so that it must live largely upon sand worms and various marine molluscs.

This bird has the peculiar cry or whistle, well-known to most sportsmen. Nidification begins in May or early in June. The period of incubation is from sixteen to twenty days, in which process both birds participate. Like the Lapwing, the Golden Plover is ever on the alert, especially the sentinel bird, and a variety of aerial antics are indulged in to decoy the intruder from the nest.

The young birds have a yellow down over their bodies, spotted or blotched with black, which affords them a natural protection by harmonising with their surroundings. The plumage differs in the spring from that in the winter, but the male and female of the adult Golden Plover are very similar at the same season of the year. The male, in the pairing season, has the bill blackish, and the tarsus and feet a dark grey. Throat, neck, breast and belly are black. Tail feathers brown, with dark shadings.

In winter the throat, belly and vent are white. On the upper part of the body the feathers are blackish, the margins of each feather having golden spots upon it. This predominance of gold on the feathering confirms the title of the bird. On the neck the feathers are black, with their margins tipped with gold.

The Golden Plover is a bird that is highly esteemed for the edible quality of its flesh, and a large number of these birds find their way into the market during the migratory period. Flocks of them frequently contain other Plovers, such as the Grey and the Lapwing.

Grey Plover

(*Cuvier Squatarola Cineria, vel Hebreтика Linnaeum.*)

THE Grey Plover is chiefly an autumn or a winter visitor to the British Islands, being most plentiful on the eastern coast. It also visits the west of Scotland. Most of these birds migrate to Great Britain during the autumn, either in September or October, and it is uncommon to find a Grey Plover remaining longer than March or April. It is in the spring that the birds are most abundant, as they are migrating northward to their breeding grounds.

It is a bird that is mainly confined to salt marshes, and is very fond of frequenting the mouths of rivers. Its breeding ground is on Kolguev Island, the Valley of the Yenisei, and the Taimur Peninsula ; also in Alaska, Melville Peninsula, and on the banks of the Anderson River.

Its nest is made on the ground, is of a very simple structure, and often found in a ploughed field, four eggs being laid, of a light olive colour, splashed with black.

Its food consists of sea worms, various insects and their larvae, likewise marine mollusca, along with other small crustacea found in mud flats.

The total length of the Grey Plover is about one foot, and its weight seven ounces.

The most likely places to shoot it is on the shore, during early morning, or in the evening, whilst engaged in feeding ; but, being a very wary bird, it is considered difficult to shoot, and even when shot is distinctly inferior to the Golden Plover, so far as its edible qualities are concerned.

The Greater Winged Plover

(*Aegialites Major.*)

THIS bird is widely distributed throughout the British Islands, especially on sandy coasts, warrens, and dunes, these being its favourite haunts.

It prefers the sand and shingle to the mud flat, and follows the retreating waves in search of food, which consists of shrimps, small crustacea, and sand worms. Its flight is short, and it has a particular fondness for holding its wings stiffly when about to light.

Large flocks of these birds are frequently seen during the autumn and winter. May and June are the months of the year for egg laying, the nest being merely a hollow in the sand. Incubation occupies about three weeks.

The female is similar to the male in colour, but the young birds are lighter.

The Great Plover is a migratory bird, arriving about the middle of March, and leaving in October. The length of the male is sixteen inches, or thereabouts, the bird being rather tall and well set-up. The bill of the male is black at the tip, but yellow towards the base, whilst the legs and toes are a greenish colour. The chin and throat are white, whilst the lower portion of the neck, the breast, and the belly are a yellowish white. The back of the neck and the top of the head are brownish with dark markings on the centre of each feather. The upper tail coverts and the wing coverts are mainly a reddish brown, with a darker streak in



GREAT SNIPE.

the centre of the feathers. Great Plovers, as before stated, will be found in flocks in March, but quite early on in April they begin to disperse to their breeding grounds. It is a good bird for the table, and wild fowlers frequently secure a number of these, along with Sanderlings and Dunlings.

The Lapwing

(*Vanellus Cristatus.*)

ALTHOUGH the Lapwing cannot be regarded as a true British Game Bird, its commonality renders it expedient for us to give a brief mention of it in a work of this description. It is amongst the commonest of British birds, and familiar to almost everyone, being widely distributed throughout the British Isles, not excluding the Orkneys and the Shetlands, but perhaps, it is commoner in Scotland and in Ireland than in England. In some foreign countries it appears to be a summer migrant. In size and symmetry the lapwing is closely allied to the other Plovers but the flesh is not of the same palatable nature. Its habits vary with the season, and with climatic conditions, for instance, whilst nesting it becomes much tamer than at other times, as it is decidedly of a shy and wary nature. It is very fond of frequenting rough pastures, marshes and arable land, huge flocks of these birds being frequently seen

in such localities, being of a gregarious nature, although the breeding colonies may be scattered. It is a very noisy bird and its note 'pee-weet' is heard particularly at night, in fact, all night through. It is an early nester, eggs being commonly found in March, but the majority of these are laid in April. June must be considered a late nesting month. The nest is of a very simple character being merely a slight hollow in the ground in which four eggs of an olive or buff colour with dark brown markings are deposited. Both male and female birds assist in incubation. The food of this bird consists of grubs, worms, snails, seeds, young shoots, etc.

The Pheasant

THE genus *Phasianus*, or true Pheasants, includes numerous varieties, but the principal ones kept in British game coverts are: the so-called Black-necked Pheasant (*Phasianus Colchicus*), the Mongolian Pheasant (*Phasianus Mongolicus*), the Japanese (*Phasianus Versicolor*), the Chinese (*Phasianus Torquatus*), and the Bar-tailed, or Reeves Pheasant (*Phasianus Reevesii*). It is from one or more of the foregoing varieties that the whole of the Pheasants throughout British preserves have been derived, though it is seldom that any of these birds will be found on game preserves in their pure state.

The preservation and rearing of pheasants is always an expensive business, and any attempt to raise pure-bred birds for shooting purposes would be beyond the reach of sportsmen, generally.

The introduction of several pure-bred birds into the covert usually exercises a very salutary influence, (and it is a general practice amongst game preservers to follow this plan,) owing to their powers of pre-potency; in other words, to the perpetuation of fixity of type.

Before proceeding further, it is necessary to explain that the genus *Phasianus* is associated with the locality from which the true Pheasants have been derived, namely, the River Phasis, in Asia Minor.

The Old English, or Black-necked Pheasant was introduced into Great Britain in all probability by the Romans, and as the Normans had marauding intercourse with the peoples of the Levant, it is not unreas-

nable to assume that some of these birds were captured by them, and subsequently brought over into our islands. Obviously the birds soon became naturalised, as the woodland and climate would be much more favourable at that time than at the present, the tracts of forest growth being more extensive then than now, and commerce, as we understand it to-day, almost unknown.

For hundreds of years the Black-necked Pheasant has bred freely in the coverts, and its preservation has materially enhanced the esteem in which it is held as a game bird. On some estates this original type of pheasant in the only variety kept, but in the majority of game preserves it has been crossed with the Chinese or Ring-necked Pheasant, resulting in the production of the hybrid so universally distributed, and whose fertility is beyond all question or doubt.

The Chinese Pheasant has mated so admirably with the old Black-Necked breed that the latter are, as previously stated, confined to few estates.

So far as pheasant culture is concerned the Japanese and the Reeves Pheasant can almost be dismissed from further consideration, as their influences are mainly noticeable either in connection with the plumage or rapidity of flight, and, in the case of the former, its degree of prepotency is too unstable to render it of any real permanent value.

During the last few years a better variety of pheasant than the Chinese, *i.e.*, the Mongolian, has been introduced into Great Britain, and, so far, has proved an unqualified success. *Phasianus Mongolicus* comes, as the name implies, from Mongolia, a province of



China, pure specimens of which have, from time to time, been imported, but as these birds readily breed in confinement, no difficulty need be experienced in rearing pure-bred birds, from imported stock.

The Mongolian Pheasant is hardy. The hens are good layers, fertile, and mate extremely readily with the Black-necked breed. It is customary, however, in pheasant culture, to cross pure Mongolian cocks with the ordinary hybrids of the coverts. The weight of the birds is increased, their constitutional vigour strengthened and flight improved, whilst beauty of plumage is in no way diminished. In the same manner that the white ring round the neck is significant of the Chinese Pheasant, the same remark is applicable to the Mongolian, only the ring does not extend all the way round the neck, stopping short beneath the throat, thus leaving an area of coloured plumage extending from the breast upwards.

A still more significant feature of the Mongolian Pheasant is that the whole of the wing coverts are white, therefore the presence of these pheasants in hybrid birds affords good evidence that Mongolian blood has been introduced.

Half and three-quarter-bred Mongolian hybrids are not to be surpassed for shooting purposes, and there need be no hesitation as to the introduction of these birds into a covert. We have seen it stated that their young are somewhat difficult to rear during the first few weeks of their lives, but if they are properly cared for they are no more difficult to rear than the ordinary hybrids.

The pure-bred Mongolian is a big strong bird, and is

particularly valuable for re-establishing vigour into stock that has become weakened through continued in-breeding. As a table bird it is unsurpassed, and, what is still more important, is that the half-bred Mongolian shows little disposition to stray.

It is of interest to note that pure Mongolian eggs can be bought for £6 per 100 up to the 12th of May; half-bred Mongolian up to the same date, or even a week or so earlier, at £3 10s. per 100; whilst eggs from the Black-necked breed, at a corresponding date, can be obtained for about £3 per 100; 110 eggs are usually reckoned to the 100.

In passing it is interesting to note that from April up to the first week in May, pheasant eggs command the highest prices, and the lowest prices in June, being only about £1 per 100 in the last-named month. It is customary amongst game farmers to guarantee from 85 to 95 per cent. of the eggs they sell to be fertile, and will undertake to replace infertile ones, but the words "Infertiles replaced" is very often misleading, these being replaced at a period of the year when the eggs are probably only worth one-fifth of the price the first lot were at the time of consignment.

The keeper should protect himself against such occurring (which he can do) by making a conditional proviso at the time of purchase. Thus, for instance, if he purchases eggs at £4 per 100 in April, and they fall to £2 in June, the seller must reimburse him an amount in eggs equivalent to their value at the time of purchase, otherwise the loss may be considerable. The fertility of the eggs, can to a large extent, be controlled, as proved by the guarantee of the vendors.

When healthy birds are kept in pens which are shifted at least twice a week to fresh ground, or else are on land of practically unlimited range, fertility of the eggs is most certainly assured, and from 90 to 95 per cent. of strong chicks should be hatched.

On most estates eggs have to be stored, as they are collected from the woods, but it is not advisable to keep them for more than a fortnight, during which time they should be frequently turned to prevent infertility.

If the eggs are dirty when collected, it is advisable to cleanse them with tepid water, and afterwards dried.

The air should be allowed to circulate freely all round the shell, this being also the aim in turning the egg. Stored eggs should be kept out of the sun, and, whenever, possible, facing the north.

The collection of eggs is always a matter of extreme concern to the keeper, not only because so many of the nests are placed in hedge-rows and in proximity to footpaths, but because the young broods may be hatched and receive little, or insufficient attention, or be unduly exposed to the predatory onsets of both winged and ground vermin. We believe that most keepers will agree in the opinion that eggs collected from the woods produce more vigorous broods than those from the game farms. Whenever surplus eggs from wild birds can be obtained, no opportunity should be lost in purchasing them.

No matter whether eggs be collected from nests in the covert, etc., or from the pens, it is necessary to remove them as they are laid, replacing them with dummy eggs.

The average number of eggs laid by the wild pheasant

is from thirteen to fifteen, whereas penned birds will at times lay more than double this number. On many estates the keepers remove one-half of the eggs from each nest, allowing the hen pheasant to hatch, under natural conditions, the other half, whilst the eggs removed from the nest are hatched either under a hen, or by artificial incubation. This system is one which has much to recommend it.

Supposing that a keeper knows of a hundred nests on the estate, he will be able to collect some 700 eggs or so, and these can be hatched under hens, as a hen is capable of covering twice the number of pheasant eggs, that a hen pheasant is able to do.

The removal of a part of the eggs from the nest is a safeguard against the destruction of hundreds of eggs by magpies, hooded crows, jackdaws, etc. Nevertheless, on certain estates, no artificial rearing is practised. Under these circumstances, it is expedient to afford the sitting hen pheasant and her eggs some degree of protection, which can be done either by encircling the nest, at a distance of three or four feet, with some odorous substance, such as Renardine, a small quantity of which should be sprinkled on the grass and bushes around. It is a well-known fact that a sitting hen, at the time when the eggs are about to hatch, has the strongest scent, thus rendering her specially liable to fall an easy victim to the fox. The same substance can be used to protect the aviary birds, during the time they are penned for egg-laying.

Another method of protecting the sitting pheasant is to encircle the nest with strong wire netting (narrow mesh).

Concerning foxes and pheasants, it has been suggested that the latter possess a certain amount of hereditary instinct which affords them a relative degree of protection against Reynard, and that it is advisable, in district where foxes are preserved, to purchase eggs from a locality where such preservation is carried on. This theory concerning *hereditary instinct* in pheasants is worthy of consideration, as it is based upon well ascertained facts in connection with other animals. The transmission of particular qualities is beyond dispute, and it is not illogical to suppose that pheasants are any exception to the rule. Stock from successive generations of birds, leading their lives amongst, and exposed to, the dangers of foxes, necessarily acquire a greater degree of supremacy in their struggle for existence, than would otherwise be the case.

Concerning the preservation and rearing of wild pheasants it is of interest to note the system adopted on the Euston Estate, as recorded by the head keeper there. In the "Gamekeeper" he says:—

"The eggs we pick up as follows: those by the roadside, those in nests that have been forsaken, those from nests in which several birds have been laying, and all those deposited in partridge nests. We also remove nests in places where they are likely to be interfered with by men carrying on cultural operations. The coverts are not searched for nests at too early a date, for it is first advisable to allow the pheasants to get well down on their eggs. Then we pick up all forsaken and unduly large nests, mark those not yet complete, and all that are sitting. The eggs picked up are taken home and placed beneath hens till they are

chipped, when they are distributed amongst pheasants sitting in coverts and fences, which carry out the final stages of hatching and go off with the chicks.

“ This work of committing chipped eggs to wild hen pheasants must be carried out with the greatest care, if good results are to ensue, for readers must understand that the birds dealt with are wild, none having been reared by hand or become tamed thereby. We do not like to give a hen pheasant chipped eggs unless she has sat upon her own at least a fortnight, and it is better if she has been sitting three weeks. If the bird has been on the nest the length of time stated, she is not so easily induced to desert, and will better endure the interference caused by changing the eggs, as, of course, her own are taken from the nest when the chipped ones are deposited therein, and they, too, are brought to a hatching point by a hen, and, in turn, given to another bird.

“ It is not safe to give eggs about to hatch to a pheasant which has sat but a few days, for in nearly every case she smashes them. When a bird commences to sit she is fat and heavy, but gradually loses condition as incubation progresses. By the time the chicks are ready to appear she becomes light, and there is no risk of her weight crushing them.

It is best to seize the opportunity of a hen pheasant being off at feed to exchange the eggs, but an exceedingly small percentage desert even if they are lifted off with a stick, granted that they have sat for a fortnight or more.

“ Greater care must be observed should the weather be cold or wet, because under such conditions the birds

have a more marked inclination to desert on the slightest interference.

"Fourteen or fifteen eggs are given to each pheasant to hatch, and, as all are chipped, there are no bad ones amongst them. Should we find a hen sitting in a dangerous situation, she is the first to have a clutch of chipped eggs committed to her care, so that she may go off as early as possible.

"The percentage of nests treated in the way described is not as large as may be imagined, as more than half our pheasants nest, lay, and hatch without interference from us."

It is better to have the nests in a covert widely distributed than have them in a central portion of it, and it will be noticed often that the strongest broods are those nearest to the boundary, where there is more insect life to feed upon.

It may be accepted as a fairly accurate statement that not more than 50 or 60 per cent. of birds covert hatched attained maturity, whilst fully 70 or 80 per cent. of those placed in the rearing field survive.

Where heavy bags of pheasants are a necessity, hand-rearing must be resorted to. Nevertheless, it is advantageous to supplement the bag with a certain proportion of wild pheasants, as the latter birds are usually very strong, and sharp on the wing, but whether they afford better sport than birds raised from penned pheasants, is an open question.

When eggs are laid in pens, the nest boxes should be examined night and morning, and the eggs removed, otherwise there is a temptation, especially for the cock birds, to acquire that vicious habit of egg eating. This

bad habit is very often the outcome of the want of something better to do, and if the temptation is not placed in the birds' way there will be no inclination to resort to it. If there is an offender of this kind in the pen, the sooner it is isolated the better.

Some keepers have very strong objections to the presence of wild bred pheasants in coverts amongst those that have been hand reared, in the belief that they induce the latter to stray, and that even one wild pheasant, especially during a "drive," will lead the rest of the birds away, thus spoiling the sport. To overcome this it has been suggested that a keeper should know the whereabouts of all wild broods, and that such birds should be the first to receive the attention of the gunners, the earlier in October the better.

If there is a large number of hand reared pheasants on the estate, the wild bred ones do not care to associate with them. On a small estate the latter are rather an advantage than otherwise.

We have previously referred to the purchase of eggs from game farms in which the pens are moved at fairly frequent intervals, and the advantages of keeping birds on as wide a range of grass as possible, in order to ensure fertility of the eggs. We have also referred to the hereditary influence which should enter into the selection of eggs, but there are further matters which it is necessary to briefly refer to.

Instead of settling at once upon a particular game farm it will amply repay a game preserver to pay a visit to several establishments, and this without preliminary notification, as preparation for a contemplated visit has been adjusted, so as to meet the

SNIPER ABOUT TO SIT.



requirements of the visitor, and this to his subsequent disadvantage. Reliable firms do not resort to any such practices.

The earliest eggs are not, as a rule, as fertile as those which are laid during the last fortnight in April and the beginning of May, whilst those laid by hens two years old, which have been mated with cocks of the previous season, are usually admitted to produce the most vigorous chicks. It is a mistake to purchase wild eggs after the middle of May, the probability being that such have been sat upon, and be in a semi-hatched condition.

The general condition of the birds is an important guide in estimating the quality of the eggs.

Whenever losses are known to have occurred through enteric or any other infectious disease the purchase of eggs from such a game farm should be avoided. The chicks are likely to be hardier if eggs are selected from a game farm in an exposed position, where the soil is of a clay formation, rather than from a sheltered farm with a light soil. Never purchase eggs offered at a very low rate, as such are very often disposed of wrongfully; and, above all, do not buy eggs which have possibly been stolen from the estate in which you are concerned with the preservation of its game, or from unknown sources.

Eggs that have been exposed to frost, extremes of heat, or to excessive wet, are almost sure to prove infertile. There are so many old-established game farms, whose reputation has stood the test of years, that there is really no necessity for any proprietor or his keeper to patronise those without such reputation.

as this is almost certain to end in disappointment to a keeper going freshly on to an estate, and may tell heavily against his prospects as well as give dissatisfaction to his master.

Pheasant Pens and Management of Penned Birds

No matter whether it is the game farmer or the private rearer, the construction and management of the pens, as well as the suitability of the ground, are matters demanding forethought, in fact, upon such, success or failure will ultimately depend. At the outset, it is necessary to state that all pens should be movable, portability being a *sine qua non* in the construction. To keep adult birds on the same ground year after year is a pernicious practice, nevertheless it is one that is not infrequent in some establishments.

It is surprising how soon the ground becomes fouled, and the birds suffer in consequence.

On some game farms it is customary to shift the pens twice a week (though it is a general practice to allow each pen to remain on the same ground all the season) or when this cannot be conveniently done, to have a number of disused pens, so as to periodically shift the birds from one pen to another, though this is distinctly inferior to using portable pens.

Portable hurdles are now sold for the construction of pens, so a keeper can, if he prefers, construct his own

aviary, using a wooden framework, and either wire netting or specially prepared waterproof cordage, which is made expressly for pheasant pens with $2\frac{1}{2}$ -inch mesh, costing about 7d. per yard.

The hurdles referred to are six feet high, and have a galvanized sheet of iron, below, which is a great advantage for the birds, and the cost is four shillings per yard, with the doorway extra.

A pen should be made of eight hurdles, and, preferably, each hurdle should be six feet long, which will give twelve feet (or four yards) each way, but the more space the birds are allowed the better.

The top of the aviary is better enclosed by waterproof cordage, as the birds are much less liable to injure themselves when flying against it, than if composed of wire netting. No covering of any kind is required, as pheasants are very hardy birds.

If one wing is kept cut, they will be unable to fly, cutting off about a dozen flight feathers close to the quills, thus avoiding further risk of injury, or the wings may be brailed, for which purpose dealers in poultry requisites supply brailing chains, with rubber attachments. Two pieces of tape may be taken, equal in length, and two knots tied a few inches from each end so as to leave a central loop. The loop is passed over the front part of the wing, and one set of loose ends brought up behind, between the wing and the body, and then secured to the other set.

The posts of the hurdles should be well sunk into the ground, and if a layer of wire netting is pegged and sunk into the ground outside the hurdles, this will prevent the depredations of the fox, etc.

The shelter which the corrugated iron, or boarding, affords is invaluable, as it prevents the birds from being frightened. If the pens are made according to the dimensions given, each of them will accommodate five or six hens, and one cock, which is the right number of hens for each male.

The pheasant is, in reality, monogamous, but under domestication has become polygamous, that is, instead of having a single wife, he has several. It is necessary that a limit should be put upon his procreative power, otherwise there is a liability of the eggs being infertile, or the brood weakened, in consequence.

The site selected for the pens should be one that is well drained, and have a good bottom of clover for preference, and the position as free from disturbance as possible. A hill side is suitable, as it favours natural drainage. During prolonged drought the pen should be shifted into a shady situation, as grass is one essential towards the fertility of the eggs. As a laying place, in each pen, some fir or other evergreen branches should be stuck into the ground, and fastened at the top, so as to form a retreat, which should be about four feet high. Several of these can be erected in each pen, as they make admirable shelters for the birds.

The birds should be caught and penned early in January or February, and interfered with as little as possible, as they are easily frightened, especially just after being caught. Sometimes one or two of the hens in the pens may be taken a dislike to by the rest of the hens, or possibly by the cock bird ; if so the best plan is to remove the offender or the offended ones, as there will be no peace till such has been done. To



GREY PLOVER.



have a hen harried or pecked to death constitutes the worst offence in the pheasantry. It is a wise plan to keep the birds in a separate pen for about six weeks prior to placing them in the pens, where they will be required to lay the eggs.

It is essential that they should have a plentiful supply of pure clean water, and an abundance of grit, sharp flint and crushed oyster shell being the best for this purpose, also for preventing the baneful habit of egg eating. Whilst in the pens feed the birds three times a day, morning, afternoon, and evening, the morning meal to consist of soft food, the mid-day meal of green food, whilst hard grain should be given in the evening, scattering the food about the pens; but during the first few weeks particular care should be taken not to give too much, otherwise the enforced confinement and excess of food will render the birds too fat, thus hindering egg production. Maize meal should be avoided, as it is inclined to lead to the internal deposition of fat.

The feeding of adult birds, no matter whether in covert or in aviary, is a matter which must receive a considerable portion of the keeper's attention.

If birds in covert are not properly fed, especially during inclement weather, sportsmen will be ready enough to draw the keeper's attention to their poor condition. Plump birds are what the sportsmen like to shoot, but, what is still more important, those which the game dealer prefers to purchase.

During the winter, stacks should be provided in the covert, each stack being raised from the ground, either by means of hurdles, or some other arrangement. They

should consist of a number of sheaves of oats or corn, so that the birds can obtain the grain as they require it. The sheaves should have the ears put inside to prevent small birds taking them, and when the keeper visits the stack, all that he has to do is to pull a sheaf or two out and scatter it about. This will not, of course, supplant the necessity of hand feeding, the usual foods being, in winter, oats, beans, peas, buckwheat, barley, etc. It is a very good plan to accustom the birds to feed near the stacks. A mixture such as the following, can be recommended for feeding the birds in the covert in winter :—buckwheat 28 lbs., Indian corn 1 cwt., small horse beans 28 lbs., oats 56 lbs., barley 56 lbs., peas 28 lbs., wheat 56 lbs., lentils (broken) 28 lbs. The addition of a few raisins or a stone of dari, will be helpful in keeping the pheasants at home.

The feeding ground should be changed occasionally. The birds must be supplied with water and, as stated elsewhere, be fed with absolute regularity. It is better to feed the birds by scattering the food on the ground, than giving it to them in a trough. Many patent contrivances have been devised for pheasants to feed from. The chief haunt of the pheasant from September until February is the covert, but as breeding time approaches the birds begin to leave the coverts.

Pheasant Rearing

STRICTLY speaking, the term "Pheasant Rearing" includes the period from the time the chicks are hatched, until the commencement of the shooting season.

The rearing season with the keeper is one of constant anxiety and watchfulness, a successful season being the best testimony as to the keeper's abilities, though failure does not necessarily indicate an absence of skill. There are many factors which may develop and be beyond his control, such as excessive rain, absence of insect life, an onset of enteric, gapes, or roup, etc., all of which are, unfortunately, too often prevalent.

The rearing field constitutes such an important part in successful pheasant culture, that it is necessary to say a few words concerning it.

If every keeper had his choice there would be less disaster amongst the young birds ; but, unfortunately, there are many gamekeepers who have to rear their young birds on the same ground, season after season. Cultural operations are responsible also for a limitation of choice of site. The keeper, able to have fresh rearing ground every season, is indeed to be congratulated, as nothing can be more contributory to success.

The ideal rearing field is a sloping, upland pasture, with a south or south-west aspect, preferably sheltered on the northern and eastern sides by a belt of trees.

Permanent pasture land is preferable to temporary grass, but a dry porous or sandy soil, being deficient in insect life, is not good, nor is ground that has been used in successive seasons for pheasant rearing.

Hill sides which are covered with ling, moss, and short grasses are equally pernicious. The writer does not advocate that a covert should be too close to the rearing field, otherwise there may be a scarcity of insect life, with the still greater drawback of the tendency of the broods straying into the coverts. Some keepers

prefer small fields for rearing on, insisting that the hedgerows produce large quantities of insect life, and that the chicks in consequence thrive better. The chief drawback to such an arrangement is that this plan favours the onslaught of hawks, and possibly of stoats, and, if this plan is adopted, special vigilance is necessary. If the rearing field is situated more than a mile from the keeper's house, a great deal of extra trouble is entailed.

A particularly dry soil is adverse to pheasant rearing, and in a prolonged season of drought the free use of the watering-can will be found to bring insect life to the surface.

The hatching of eggs should be so arranged that the young birds will be placed on the rearing field during the last week in May or the first in June, and it is distinctly advantageous to have the hatching completed as speedily as possible, as nothing entails more trouble than to have a large number of broods of different ages on the rearing field. Moreover, late birds do not, as a rule, succeed so well as those hatched about the time specified. If hot weather prevails, the young birds must be protected from the sun, and plenty of air allowed to circulate through the coops at night.

Before the birds are placed on the rearing field, traps should be kept freely going, so as to clear the ground of vermin, thus saving serious losses later on. Kestral and Sparrow hawks, as well as foxes, stoats, etc., usually give a lot of trouble, and effective means must be adopted to deal with them.

The hawks are usually most troublesome in the early morning, as then, being hungry, assaults are to be looked for.



THE BUSTARD.

Before being placed upon the rearing field, the coops should be thoroughly cleansed with hot water, disinfectant solution, and well limewashed inside.

Place them upon level ground during dry weather, and at not less than thirty yards apart. Where space is available the distance may be still greater. Frequent shifting of the coops is an excellent plan. Many keepers use matting to rest the coops upon, but in the writer's opinion, they are better without such. Collapsible coops are the most sanitary ones, and certainly the most convenient, as they can be taken to pieces, thoroughly cleansed, and packed away flat. The latter are about double the price of the ordinary coops. It is a debatable point whether it is an advantage for coops to have runs or to be without such. We are strongly in favour of each coop having a run protected by wire netting. Unless the run is wired in the coop is better without it.

As soon as the eggs begin to chip, all should be removed from under the hens, excepting two or three, the process of incubation being completed in the incubator, as this saves a number of chicks from being trampled to death. When they are hatched they should, at once be put in the drying box and, when dried, removed to the coops.

No hen should have more in a brood than sixteen, else she will not be able to cover them properly.

A number of chicks can be taken to the rearing field at the same time, and doled out to the hens, till each has a full brood. The coops should then be closed until evening, but the chicks do not require any food for the first twenty-four hours, as the yolk which has

been absorbed in the system previous to hatching, afford the young birds sufficient nourishment for about the time specified.

Before removal to the hen, they should be fed and watered, as this helps the broody hen to settle down.

The feeding of the chicks is a matter which calls for special attention, the regularity, sufficiency, and suitability of the food, being a *sine qua non*. The more insect life there is on the rearing field the better, and the more economical will be the feeding. If insect life is scarce the deficiency must be supplied by a food of an equivalent nature, hence the reason why ants' eggs are in such great demand for pheasant chicks. It is a general practice amongst game preservers to feed the young birds five times a day, until they are about a fortnight old, beginning with the first meal at 6 a.m. and finishing at 6 p.m.

For the first two days, that is after the 24th hour, it is usual to give the chicks hard-boiled eggs broken up and passed through a fine sieve, subsequently mixed with a little meal. One egg will be sufficient for about thirty birds. Fine white biscuit meal will do very well for this purpose, the addition of a little green meat, such as finely-chopped lettuce, is an invaluable adjunct, or spinach, dandelion leaves, or young nettles can be substituted.

In place of hard-boiled egg, baked custard can be used, in fact it is the more assimilable of the two, and can be mixed with the biscuit meal. Neither stale nor sour food must ever be given. Excess of food should not be given, or unconsumed food left in, or around the coop. Mixing boards and feeding utensils must be kept

scrupulously clean, in fact scalded night and morning. Sour food is very liable to scour the birds, and the appearance of one trouble may be the forerunner of others. It is a debatable point whether the chicks require water or not, and in this respect much depends upon the moisture in the grass. A small quantity of fine grit is just as necessary for chicks, as it is for adult birds. Bartlett recommends that the water should be sterilised by boiling before being given to the young birds, though as previously stated, some keepers give their chicks no water at all. If they show any tendency towards summer diarrhoea, soda water will act as a corrective.

The white and the brown biscuit meal, with the addition of a small quantity of any other well-known pheasant meal, may be used up to the first fortnight, also with egg, crushed hemp, and a little canary seed.

Boiled rice, thoroughly boiled, and barley meal, fine oatmeal, soaked stale bread, and various other meals, likewise chopped leeks and onions are all used in feeding pheasant chicks. Well boiled *ground* rice, along with custard pudding should make a good food for them. Ants' eggs and gentles are invaluable, when the chicks begin to tire of starchy foods. In some localities where the soil is dry, the ants' eggs can be obtained in abundance, but in some districts they are unobtainable.

To obtain gentles, *i.e.*, maggots, a metal trough or wooden box, six inches deep and about one yard square, with the bottom perforated, and put in it a mixture of bran and sand. Place it on a shallow tray, and over it suspend some horse flesh or other green

meat which will putrify and give rise to a crop of maggots. As these become mature they will fall into the bran and sand, which cleanses them. By shaking the trough they will pass into the tray. Prepare them for the birds' use by heating them on a shovel, which will dessicate them, and render them fit for the birds to eat. Too many maggots are injurious, and liable to provoke scour. As a substitute for either of the foregoing, beef and mutton greaves are largely used by keepers, but these must be used very sparingly, and when greaves are used, rice is the best corrective.

White pheasant or mutton greaves can be had in the form of a meal, which is certainly the best one for young birds.

From a fortnight to a month old they should be fed four times a day, namely, at 6 a.m., 10, 2 p.m., and 6. More green food can be given, and the egg food gradually withdrawn. The medium biscuit meal should be substituted for the fine.

Boiled rice is still an efficient and economical food, especially along with a small quantity of the greaves previously referred to. Canary seed and hemp seed can still be given. Take care that the rice does not get burned, as there is nothing worse than this for them. To prevent this, throw the rice into boiling water after it has been previously swelled by soaking it over night in cold water. After boiling, the particles of rice should come out separate. As previously stated, it is an excellent food for chicks, but must be carefully prepared.

From one to two months the same food may be given in increased quantities, and with the addition of any of

the pheasant foods sold for the purpose. Boiled potatoes and barley meal, together with pease meal, can be given as alternative foods.

From this period up to four months old, the young birds should be fed three times a day, morning, noon, and night. A good deal of dried grain can be given, especially barley, oatmeal, buckwheat, rape, canary and dari seeds, or any of the covert seed mixtures sold by game food purveyors.

The removal of the birds to the covert should be deferred as long as possible, but the majority of keepers take them to it when they are about eight weeks old, though some a fortnight earlier and others two or three weeks later.

CONCERNING the hatching and hand-rearing of pheasants the following was awarded the first prize in the Captain Freeman Competition, and as the essay is one of real practical value, we have taken the liberty of reproducing it verbatim from the "Gamekeeper," of April, 1903.

"It is an exceedingly difficult matter to ascertain at what stage to begin an article on pheasant rearing, but a keeper knows that, if he is to have a really successful rearing season, he must give the best of his energy and experience, and practically the whole of his time to that object from the day the first hen is penned to the morning of his first covert shoot. There is no question about the treatment accorded to penned pheasants having a great deal to do with the healthiness of the embryo contained in each egg produced, and also with the stamina of the chicks after they are hatched; so no keeper can afford to allow the least little bit of

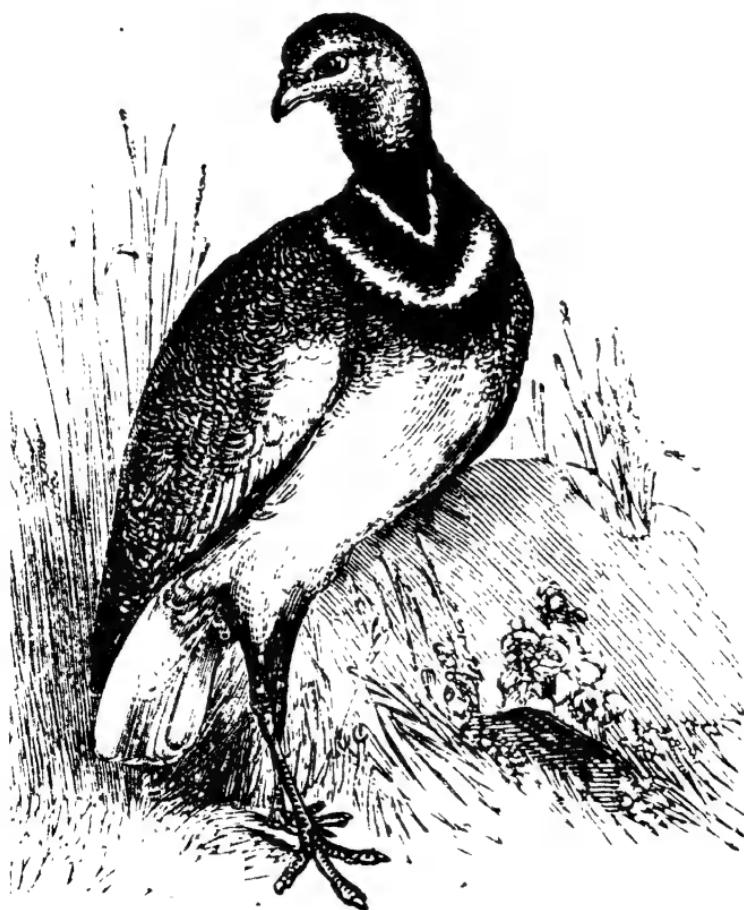
inattention or carelessness to creep into his daily work in connection with stock birds. There is always a certain amount of difference of opinion as to whether it is better to have penned birds at all, or simply to buy the required quantity of eggs from a pheasant farm. I certainly believe in every estate where rearing is carried on having a pheasantry ; the keeper will then have an interest in seeing that his eggs are up to the mark, and will pay particular attention to providing a change of blood each season, and the most experienced man may certainly learn something new every year about the habits and requirements of his charges. If eggs are bought, it should be every man's aim to make certain that they are procured from a reliable and trustworthy source ; it never pays a first-class firm of any kind to supply a doubtful article, and cheap eggs are always doubtful, both as regards quality and the honesty of their production.

" The keeper who has paid proper attention to his aviary birds and also to his egg dealer need have little fear of failure from bad eggs ; and the next thing to be considered is the proper method of sitting and hatching, so that best results may be obtained. It used to be the dream of every rearer to have a hatching-house where the nest boxes were piled on top of each other right round the building, and where any number, from fifty to two hundred, broody hens were sitting in terribly confined space. Now anyone not bigoted will at once testify that this system is not good for neither eggs, hens, nor the keeper's temper. On going into such a sitting house of a morning, it was as much as one could do to keep down ones breakfast, and both

eggs, and hens were very apt to go wrong in so bad an atmosphere. Then, again, the hens were commonly taken off in batches, and the difficulty in getting each fowl back to her own nest was often a great strain on the temper, while, many a time, a hen did get on the wrong nest, owing to either a mistake or a wish to save both time and trouble. Now, I assert that it is important a hen be kept on her own nest right through the hatching period ; hardly two hens have exactly the same temperature when brooding, and I think this explains why certain nests in a batch of eggs all placed down on the same date have a difference of a day or even more in hatching. All pheasant eggs should be set in coops, or sitting-boxes in the open. Coops are best, as they afford plenty of air-space, and are therefore more comfortable for the hens, but properly made sitting-boxes are very handy, and take up little room. Some men go to a deal of trouble when making the nests, but it is well to remember that simplicity, in fact, downright carelessness, is a pheasant's first rule when nesting naturally, and yet it is seldom she makes a bad job of her hatching.

" What I mean is that it is not really necessary to cart a special kind of turf from a far-away corner of the estate for nest-making ; any old turf will suit if it is not gravelly. It is handiest to have the coops in regular rows, and they should be placed in a shady situation. In May the sun is often very powerful, and the nights extremely cold, so if the coops or sitting-boxes are shaded a little, the difference of the day and night temperatures will not be so much felt by the hens. When making the nests, a square of turf should

be cut in front of where the coop is to be, and it should be exactly the size of the inside of the coop ; the square should then be hollowed out on the soil side, placed in position, and the nest shaped, before the coop is lifted over it. Many nests are made far too deep, with the result that the eggs are constantly rolling on top of each other, and if this is the case, some are sure to be broken by the weight of the hen. A saucer-shaped nest is best, only it should be somewhat longer than broad. I cannot give the reason, but nineteen out of every twenty hens will be sure to sit with their heads towards the door of a coop, so the nest should be shaped to suit this peculiarity. If the turf has been cut the least bit too small it is very important to see that all hollows and open spaces are filled up ; young birds are very apt to fall into these and may be chilled to death before they are rescued. A peg and string for tethering the hens while feeding will be required, and the pegs should be driven in so that the hens may get into the holes made when taking out the turfs for the nests. In dry weather they like to dust in these. Many keepers do not trouble about taking off the tether when putting a hen back on her eggs, but I have known a timid hen to knock her nest to pieces after discovering she was still tied up, so the tethers should always be removed. The hens themselves are a very important factor towards the success or failure of hatching, and they should be very carefully selected, handled, and fed. There is a deal too much thought of small hens, with small feet, for it is often noticed with a big hen, with feet like harrows, makes a good and careful mother as anyone could wish. On the other hand, a hen of the



THE LITTLE BUSTARD.

small variety will often refuse to settle down, and may trample all her brood to death in a very short time. Therefore the hen's disposition, and not her feet, is the best guide as to whether she is likely to make a good mother. For instance, Dorkings are notorious for having large feet, yet they are hard indeed to beat as either sitters or mothers. Scotch Greys and Plymouth Rocks are heavy fowls, but are both excellent varieties for the pheasant field. They may crush an egg or two, but make up for this by their want of fussiness and greater warmth when it comes to a hovering brood. I do not say that small hens are in the least objectionable, but, if a keeper is badly off for hens, he should certainly not reject one simply because she is heavy, or has large feet. Some farmyards are very bad with disease, two of the worst kinds being scaly leg and roup, and hens from suspected quarters should be carefully examined before being accepted. There is no more insidious or unsightly disease affecting pheasants than scaly leg, and it should be ruthlessly stamped out. It will be found best to feed the hens with hard grain during the sitting period, though a soft feed mixed with cut turnips or water-cress will be of great benefit, if given once a week. Fresh water must, of course, be given every morning. A little gravel should occasionally be provided. Nine o'clock is a very good hour at which to take off the hens ; fifteen or twenty minutes is long enough for them to be off their nests for the first ten days, although later this time may be increased to thirty or even forty minutes without the eggs suffering in the least. The eggs should be turned in the nest every morning, and one soon gets accustomed to doing

this thoroughly with one single movement of the fingers through the nest. A great cause of damage is carelessness in lifting the hens off ; some hens have a habit of gathering their eggs beneath their wings, and if one forgets to look there before lifting a fowl, the chances are that at least two eggs will be broken. If an egg does get broken from any cause, remember to wash the others clean ; if the mess stays on the shells for long it becomes like glue, and it is very difficult to remove. One soon gets to know the appearance of a flea-infested nest ; dust both hen and nest with vermin powder if fleas are present, but the clean nests are better left alone. Regarding the number of eggs for each hen, I think the correct plan is to give each as many eggs as her size will permit of her covering ; to give one hen little bigger than a bantam and another nearly the size of a turkey the same number of eggs is obviously a great waste of sitting power. If the nests have been properly made, the eggs will do without watering for the first ten days ; they should then get a little every third morning for a week, and after that a very little every morning till they are seen to be chipped. Be very careful to have the water about the same temperature, as the eggs, more especially during the last week. A small watering can, with a very fine rose, is about the handiest thing to use as a sprinkler. I certainly believe in watering the eggs direct instead of taking them out and watering the nest. Nature teaches us that the first is the right way.

“ Directly the eggs are seen to be chipped, the hen should be taken off a minute or two, and be fed ; many rearers then put the hen back, and leave her alto-

gether, until they are certain the chicks are all dry, but I have often found that a hen will start to peck and kill her brood directly she feels them moving beneath her, and one can often save losses, by occasionally and gently opening the lid of the coop, and taking a peep in. The empty shells should be left in the nest until the birds are removed to the rearing field ; they keep the hen from settling down and crushing her chicks. Some recommend putting a china egg in the nest for the same purpose, but I should say that this would do more harm than good. The chicks should be quite dry before being taken to the rearing field, and they should never be touched, after it gets late ; it is much better to leave a brood in their warm nest over-night, than move them to a coop when the sun is going down. By inserting a flat piece of turf beneath the nest turf, one can get the nest on a level, and so make it more comfortable for the brood, if they have to be left over-night. A hot-water box is very essential for carrying the birds from the nest to the rearing ground, but it should be properly ventilated, and warmly and softly lined. Before going farther, it might be advisable to say a word or two about the rearing field itself, more especially as many proprietors handicap their keepers terrible by carelessness or ignorance as to what the field should really be. Many men are forced to rear year after year on the same ground, and are blamed for failing, when they never really get a fair chance of being successful. It is now a recognised fact that tainted ground is at the bottom of most of the diseases which pheasant flesh is heir to, and I think more attention and care is now being given

to this matter. A well-drained field of old grass is best for rearing purposes, and it should be grazed by cattle right up to the day the first lot of birds is put upon it ; when the chicks get old and strong enough to work at the cow-clats, they will find them a never-ending source of both profit and amusement. Grazing by sheep is hardly so satisfactory ; insects do not appear so plentiful after them, the young birds are apt to swallow any wool that may be left, and this means death. If a fence has run through the selected field at any time, be sure to look for the old post holes ; birds are nearly certain to fall into these, and the loss is often placed at the door of vermin. I have known six birds to be taken from a place of this description—after a whole day's watching had been put in for the supposed weasal. It is as well to have coops in position, ready to receive the birds, a day or two before they are expected, and especially in wet weather ; in very cold or wet weather a folded bag is very suitable for setting the coop upon the first day, and after it is removed, the ground beneath will be dry and clean enough to save at least one shift on to the wet grass. Excellent mats are now made for this very purpose, but many keepers have perforce to do without these, on the score of economy. When putting birds on the rearing ground, be sure that the hen at once settles down, and that all her chicks are beneath her. Then shut up the coop and leave them quiet for at least two hours. The run should then be placed in position, the coop opened, and the tenants presented with their first feed. In very sunny weather it will be found advisable to shade the run with a green branch or two, for pheas-

MONGOLIAN PHEASANT.



ants always thrive best in cloudy weather, as long as it is not cold or too wet. When the run is removed the birds must be watched till they have all gone out and returned, after which they will be little trouble, and if one is lost he will soon advertise the fact sufficiently to draw attention to his case. A good hiding place should be provided, to serve in place of the run, and as a refuge for the birds, when they are suddenly alarmed. One of the greatest differences in the habits of young chickens and pheasants, is that the former run to the hen when in any danger, while the latter always scatter from her in all directions. Another point is to occasionally shift the hiding place as well as the coop ; the chicks dearly love to work and climb about it, and the place where it lies soon gets pretty dirty. I am against shifting the coops too often ; once a day is quite sufficient, especially if one is somewhat cramped for room.

Pheasants all the Year Round

THE pheasant rearer finds that each month of the year provides him with a varying amount of work in connection with his birds, though some of the months demand his almost exclusive attention, and if he is at all remiss, or negligent, the day of reckoning will come when the shooting season arrives.

On estates where no artificial rearing is carried on, the keeper has not the anxieties attendant upon such,

though there is not a great number of estates that can afford to be without hand-reared birds. It may be accepted as a truism that a gamekeeper's duties extend to the last hour of the old year, and recommence with the first hour of the new one, therefore he can hardly ever be considered free from the worries of game-preservation.

The nesting and the rearing season occupy a great portion of the gamekeeper's time, and he has to be up very early, and sometimes very late at night before retiring to rest. We shall proceed to give a *resume* of the duties of the keeper from January to December, so far as the preservation of pheasants is concerned.

JANUARY.—In this month the gamekeeper has, as it were, to take stock of his birds. Covert shooting will, of course, be still going on, in fact, on some estates a great number of pheasants are killed during this month. Successful pheasant culture cannot be carried on when the male birds are too numerous, therefore the keeper has to see the cock birds reduced in numbers in proportion to the hens.

The latter should not be penned before the end of February.

At this time of the year the cock birds are very crafty, consequently difficult to shoot. But, as previously stated, the excess must be got rid of, either by fair means or foul. Some keepers trap them alive, others devote their whole energy to the destruction of these birds with their own guns, instead of relying on organized shooting parties to clear them out.

If a gamekeeper does not require to collect eggs from his coverts, there would not appear to be the same

necessity for reducing the cock birds to the approved proportion, namely, one to every five or six hens. An excess of cocks worries the hen birds, and causes them to leave the coverts, and nest in fences, far away, consequently these wild pheasants are reared on fresh ground, where there is abundance of food.

Attention should be given to the pheasant aviary, which will soon be stocked with birds. Portable ones will, of course, be shifted to fresh ground, but those which are of a more permanent nature should be thoroughly cleansed, and, if possible, the ground re-turfed. Movable aviaries are by far the best ones, but the keeper may have to be content with pheasantry which are not at all up to his own ideas. Therefore he must make the most of them.

FEBRUARY.—During February birds intended for stocking the aviaries may be caught, and it is a very good plan to place traps out in the feeding ground, and feed liberally when they are round them. The capture of the birds should be effected as quietly as possible, and no loose feathers should be allowed to remain about, neither must live birds be left in traps exposed to the light, otherwise the probability is that the bird will injure itself. Various forms of traps are employed, but probably the willow trap is as good as any.

One keeper has suggested that in order to have the right kind and number of the male sex in a covert, is to catch up a sufficient number of young cock birds before the end of the season, and keep them in confinement until all the others that can possibly be got at are shot, when the young birds can be released.

Every gamekeeper knows the evils arising through an excess of cock pheasants, as they not only harass the hens, but visit the rearing field, and peck some of the young birds to death.

Catching up of stock pheasants should not be delayed longer than this month, but there is no necessity to place them in the laying pens for another six weeks. Birds which frequent the boundaries are those most liable to stray, so that it would be just as well, in the case of cock birds, to shoot them.

To a certain extent the keeper's duties, as regards pheasants, will be regulated by the condition of the weather. It may be favourable or unfavourable to the early penning of the birds, according to circumstances.

MARCH.—Vermin trapping, as in most other months, must be persistently and assiduously carried on. Birds must be kept off freshly seeded fields, otherwise the farmer may make a claim for damage.

Examine all birds which have been caught before putting them into the laying pens. If any are affected with disease, such as scaly leg, they must be cured before going into the aviary. Give a plentiful supply of green food, water, and flint grit. The birds must be well fed this month, but do not handle them, or disturb them, for at least three weeks before egg laying commences.

March is a difficult month for pheasants in covert to procure food, so that the birds must be fed for two or three weeks. Some keepers release all the hen birds from the pens after each has laid twenty eggs. Before putting the hen pheasants into the laying pens,



THE GOLDEN PLOVER.

it is a good plan to dust each bird with flowers of sulphur, to prevent trouble from insect pests. Every keeper should endeavour to induce his pheasants to lay at the beginning of April. In mild localities eggs may be expected towards the middle of the last week in March. The keeper should watch for these, and remove them as laid. Eggs must be protected against vermin, but if the pheasantries are netted in at the top, there will be no need of trouble in this respect.

APRIL.—April is an exceptionally busy month with the keeper, his principle care being in connection with pheasant nests and eggs. If it is an early spring, the growth of herbage is very liable to hide the eggs, consequently there is a difficulty in finding the nests, yet at the same time additional security is afforded against loss of eggs through vermin, such as rats, rooks, magpies, and so forth. The hedgehog is responsible for the destruction of some eggs. Egg-stealing rooks are the worst of all. In searching for eggs it is necessary to bear in mind that some of the eggs may be partially incubated, and these, unless carried very carefully home, will be spoiled.

Eggs purchased before the middle of April cannot be obtained for less than four pounds, or four pounds ten, per hundred, but the majority of keepers purchase their pheasant eggs during the first, second, and third weeks of May. When eggs can be purchased from wild birds, they are usually considered worth a little more than those from penned pheasants, though it is a difficult matter to purchase eggs of this description.

Broody hens should be selected towards the latter end of this month, and the keeper's future success

will, to a very large extent, be influenced by a judicious selection. Every bird should be carefully examined for any trace of disease, or for the presence of vermin, such as lice. Once the latter pests are introduced into the sitting-boxes, other troubles will not be long in making their appearance. As a precautionary measure it is an excellent practice to dip each bird in an anti-septic bath, such bath should consist of a strong solution of quassia chips, with a tablespoonful of creolin added to every two gallons of water. Dip the birds thoroughly into this bath once or twice before making use of them.

MAY.—In the month of May the gamekeeper's duties will be mainly occupied in egg collecting, the purchase of eggs, hatching, and the management of some broods upon the rearing field. As soon as the requisite number of eggs have been gathered, the stock birds may be realeased from the aviary. If fallen leaves have been gathered in the autumn, and stored, they will be found very useful for keeping the pheasant pens clean, as the birds soon get used to them, and become very fond of raking about amongst them. The leaves of the oak, and the beech trees are invaluable for this purpose. If acorns and beech nuts are distributed amongst them, the birds will find plenty to do to occupy their time. Most pheasant chicks are hatched during the latter part of May, and the early part of June, therefore it is reasonable to assume that the weather will be fairly warm, but if cold winds prevail, the coops should be so arranged on the rearing field as to afford the most shelter.

The coops should have been disinfected and cleansed

during April. It is a very good plan to lime-whiten them inside, previously brushing them over with a solution of carbolic acid, or some other antiseptic. A keen watch must be kept for hawks when the chicks are released from their coops. The preparation of the food for the earliest broods will occupy a part of the keeper's time. No food should be used on the day following that of preparation, and every day all the utensils should be scalded with boiling water and soda. It is impossible to pay too much attention to the preparation of the food, to its suitability, regularity of feeding, cleanliness, and other matters which will, or rather ought, to suggest themselves to the intelligent keeper. If the dry food system of rearing the chicks is followed, some advantages are gained, but every keeper must decide for himself as to whether he will follow the older system of feeding, or adopt the one which gives him less trouble.

There are various methods of preparing eggs for pheasant chicks; the eggs can either be boiled in the shells until hard, and then chopped up finely, or they can be poached—that is, the yolk and the white dropped into boiling water, and as soon as set, chopped up. A very good way of giving them is to beat the eggs up, and mix them with other food, without any cooking whatsoever.

JUNE.—Nearly the whole of the keeper's time will be spent on the rearing field this month. In fact, assistant keepers usually take up their abode upon it until the time that the birds are removed to covert.

There are very few pheasant rearers who care to have any breeds coming out later than the third and

last week of June. Late broods, namely, those in July, are mainly intended to make up for losses sustained during the earlier months, but late birds, of course, never—or hardly ever—can supplant those reared earlier on in the season. The infertility of eggs doubtless depends upon many factors, some of which are quite beyond the keeper's control. The keeper should see that his coops are waterproof, that they are placed well apart on the rearing field, and upon even ground, otherwise such predatory creatures as stoats, weasels, rats, etc., will find an inlet to the coop, and the fox may be sufficiently wily to turn the coop over if there is an opening for him to upheave it. The majority of pheasant rearers shut their coops up at night, but the writer does not believe that this is a commendable practice, unless plenty of ventilation is provided in the coop. It is a much better plan to afford the chicks protection at night, with an adjustable wire shutter, than it is to smother them up at night in a vitiated atmosphere. There are some keepers who shift the coops to fresh ground every evening, which doubtless is an advantage. The chief reason why keepers shut up the coops is because they dread leaving some of the birds outside the coop at night after the young birds grow more independent. The same vigorous campaign against vermin must be carried on in June, with even greater assiduity. All small birds coming near the coops should be banished, as they are a very likely medium for transmitting disease. Sparrows are a great nuisance, and they should either be trapped or shot. If it is a dry season sprinkling the ground with water will help to bring

insect life on to it, but if there is a scarcity of such food, artificial insect life must be provided, or some other substitute, such as greaves, though the latter should be given very sparingly, otherwise it will do harm.

JULY.—During part—or it may be the whole—of July the young pheasants will still be upon the rearing field, and the keeper's vigilance requisitioned more during this month than even the preceding one. If the rearing field is situated close to the side of the covert, advantages are gained, though there are certain disadvantages even to this. The advantages are that the young birds will naturally find their way into the covert. Nearly every keeper likes to keep his young pheasants out of the covert as long as he can, but he can seldom do so longer than six or eight weeks from date of incubation. We ought to mention that flint grit, or some other form of grit, is indispensable for even the youngest birds. Whole wheat, unless in a very small quantity, is a bad food for pheasant chicks under three weeks old, but canary seed, rape, dari are excellent for them, and the keeper should always distribute a small quantity around the coop for the brood. Mustard and hemp seed, likewise buckwheat, will be found beneficial. Before the birds are placed in the coverts the latter should be well trapped. July is a month of anxiety, no matter however good the rearing season may have proved. A great number of birds are lost, when transferred from coops to covert. Every effort must be used to persuade them to roost on the lower branches, and thus afford them a degree of protection.

See that the young birds are liberally supplied with water, a pure supply of water being an important factor in all pheasant rearing operations, and certainly one means of preventing both adult and young birds from straying. In fox hunting districts particular care must be exercised when young birds are transferred to covert. Cubs will begin to wander from home. The best method of preventing them doing so is to feed them with rabbits. Doubtless there are many more items of the keeper's work in connection with pheasant rearing during this month, but we hope that the foregoing will be found to be a *resume*.

AUGUST.—During this month the rearing field should be cleared of its coops, but before storing them it would be just as well to have them cleaned, not necessarily thoroughly, but a superficial cleaning will suffice. Some of the broody hens can be still left with the birds, as their presence will afford them a certain amount of protection. When trapping is carried on in the coverts, the traps must be either set, or else baited, after the birds have gone to roost, and struck early on the following morning. The trapping of coverts entails an enormous amount of labour, especially on the under-keepers. Still, as it is part of their work there can be no excuse for negligence in this respect.

Pheasants which have a tendency to frequent standing corn must be driven out of this. Feeding the birds in the rides adjacent to the coverts, and stacks of corn placed here and there, will enable the keeper to note the progress of his birds, and whether there is any appreciable diminution in their numbers.

SEPTEMBER.—In addition to multifarious other duties, the pheasant rearer's work will be mainly confined to the birds in the covert, where the birds still require a great deal of attention, though less so than in August. Birds must be fed night and morning, and any tendency to straying checked. The feed stacks in the woods require frequent attention. A number of small stacks are better than one or two large ones. On many estates partridge shooting commences this month, therefore care must be taken not to allow the birds to get into the partridge drives, otherwise they will be driven off the estate altogether. The coverts must be kept as quiet as possible. If the birds are backward it would be advantageous to feed them three times a day. Plenty of good food during September affords the only means of producing heavy birds for October—the opening month of pheasant shooting.

OCTOBER, NOVEMBER, and DECEMBER.—As a rule these are the three principle shooting months in the year, and the keeper's duties are mainly in connection with the arrangement of shooting parties, covert shoots, partridge drives, the prevention of poaching, the dispatching of game to market, or the distribution of the same through other channels as requested by his employer. Many keepers, in fact the majority, continue to feed their birds on scalded corn in a proportion of greaves, and appetising seeds of various kinds. There is a strong tendency for pheasants to stray during October, and it will be just as well to shoot those birds which are disposed to roost astray. Overhanging branches of the rides must be

cut back, and other matters appertaining towards a successful covert shoot duly attended to. The keeper who understands his work does not require any instruction from the writer, even if he felt capable of administering such advice, though which he certainly does not do so, as it is quite beyond the scope of a work of this kind.

In concluding a summary of the work entailed in connection with pheasant rearing through the various months of the year, it is only necessary to add that the keeper should do all in his power to prevent the onset of those dreadful maladies which cause such heavy losses to the game-preserved every year, though which are occasionally attributable to an absence of forethought. This is a matter, however, which has been dealt with elsewhere in the book.

Removal of Birds to the Covert

IF the rearing field is close to the covert side, the birds will gradually find their way into the covert, especially if the coops are placed nearer and nearer to it each day. If, however, the field is some distance away, the coops should be removed either at night or early in the morning, preferably the former, provided that the weather is suitable. A bright, windy night is suitable for this purpose. If the coops are without bottoms, a sack should be placed carefully underneath each one, and then tacked on to the sides of the coop, so as to prevent any chicks from falling out. Before this the front of the coop should be closed in, when



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all the chicks are inside. A four-wheeled lorry should be in readiness to convey them to the covert side. The removal of the birds to the covert side is a very critical one, and unless extra vigilance is bestowed on it, heavy losses are sure to occur. When the chicks jug or "gukk," they are very liable to fall victims to vermin, foxes, weasels, stoats, dogs, cats, etc., so that the traps should be kept going. As soon as ever the birds can be persuaded to roost, they are safe against ground vermin. The fronts of the coops should be placed to front the spinney, in order to induce them to go to roost, a pole fastened here and there, below the lower branches will assist the birds up, or the broody hen placed on one of the lower branches, so as to teach her brood to follow her example. It is no use to tempt the birds to the covert till they are strong on the wing, yet, on the other hand, it is useless to leave them on the rearing field when they refuse to be shut up in their coops at night. Both are problems that the keeper must endeavour to solve with a minimum of loss.

If there is a drive in or near the covert, this is probably the best position for the coops to be placed in. There should be no young birds on the rearing field, excepting those that have been hatched very late, after the beginning of August. When the birds have begun to roost in the coverts they should be fed twice a day, and a very good food for them is small wheat and kibbled maize boiled in water till they are quite soft. To every two bushels of the corn a quart of treacle may be added. This should be allowed to stand till the corn has absorbed all the liquor. Some biscuit meal and

a small quantity of green vegetables, along with any suitable pheasant meal may be added to the corn.

Old cock pheasants are very fond of leading the young birds to stray, especially if there are corn fields near the covert, therefore a sharp look out should be kept, and the birds driven back when this occurs.

During a prolonged drought it is an advantage to remove the birds earlier to cover, as the shade thus afforded is of material service in protecting them against excessive heat. As many masters are anxious to see the young birds whilst they are in covert, in order to ascertain what the prospects of the forthcoming shooting season are likely to be. The keeper should make a practice of feeding the birds in the centre of the drives, to which the birds will readily come as soon as they are acquainted with the keeper's call.

The same individual, dressed in the same clothes, should feed the birds on his own beat, as they are much more at home with the person to whom they have become accustomed, than with a stranger.

Let them have a liberal supply of pure water, plenty of green food ; but, above all, feed them at precisely the same hour each day. Water and regularity of feeding being the best preventatives against straying.

The Dry Food System of Feeding

FROM time to time a good deal of controversy has arisen as to whether it is not more economical, as well as more satisfactory, to rear the young birds on dry food

in preference to the moist. Some keepers have been successful with the former, and speak most highly of it, whereas others have had diametrically opposite results.

There is not the slightest doubt that the dry system of feeding answers perfectly well, provided that the pasturage upon which the young birds are reared has an abundance of insect life, but the concensus of opinion amongst game rearers is undoubtedly in favour of the moist system of feeding. No doubt this is prejudice, or that they have not given the dry food a fair trial. It is argued that with the dry food the chicks are liable to suffer from the so-called "set-back" disease, which implies that the birds will be fully a fortnight less advanced in their growth as compared with what they would be if fed upon moist food. But after all the main question is, which rears the most birds to maturity?

If a keeper has to prepare his food hurriedly, or does not understand its proper preparation, the dry food is the best alternative. During a wet season, or where the rearing field is badly drained, dry food, after the first fortnight or so, answers perfectly well.

In our opinion whatever food is used for a start, dry food should be given after the first fortnight. Dry food has not been thought of for generations, this is no argument.

There are some head keepers who rear large numbers of pheasants on dry food, but the experience of generations of game rearers is that the moist system is not less economical and certainly more efficient. Considered from a physiological standpoint, young birds,

say up to ten days or so, require their food in a soft and moist condition, which, if fresh and properly prepared and carefully fed to the birds will never produce disease, so that there can be no truth in the argument that soft will promote disease more readily than dry.

A food that can be used exclusively for the first seven to fourteen days is the "Alpha" Pheasant Rearing Food, which contains the yolk of egg, insects, etc., supplied by Armitage Brothers, Ltd., Nottingham.

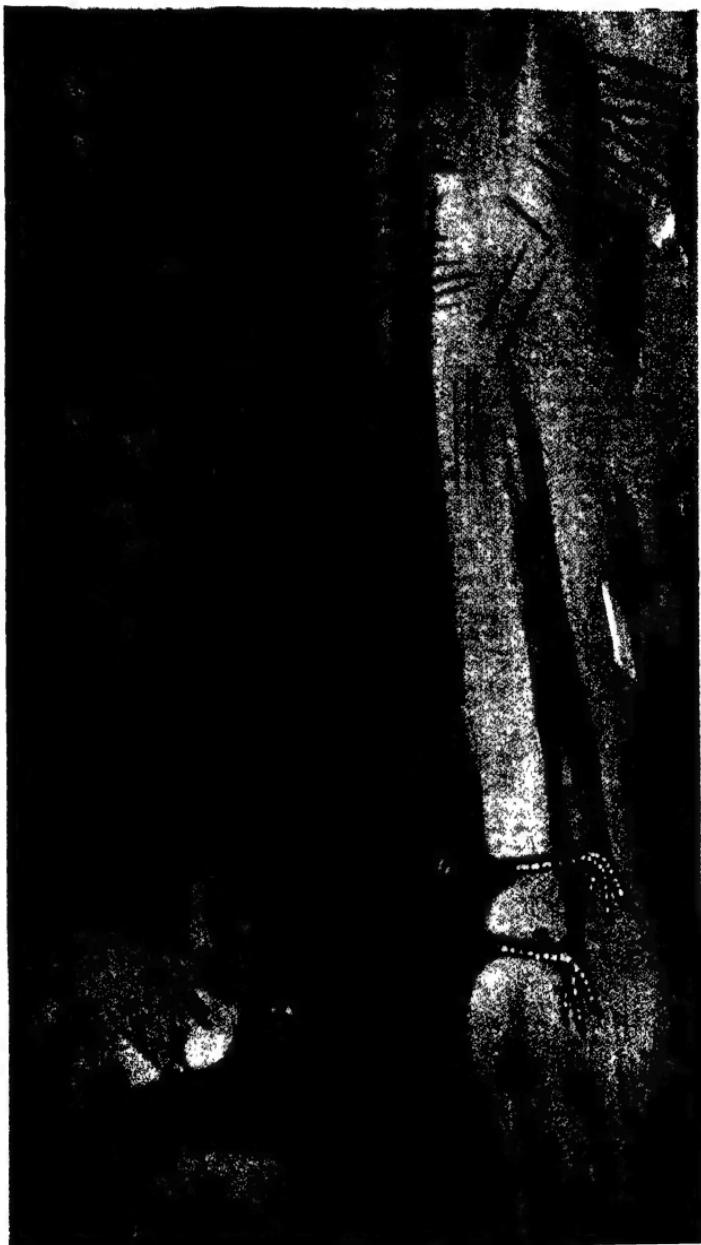
During the next fortnight or three weeks their No. 2 food can be used, which is composed of broken grain, small seeds, granulated meat, and ants' eggs. This food, like Nos. 3 and 4, is an excellent one, the two first being equally suitable for partridge rearing. No. 3, medium pheasant food, is excellent for half-grown birds, or for pen pheasants, and may be used alternately with No. 4, the last-named being a good food for both aviary and covert birds.

It is estimated that the cost per head for feeding on the above foods is from 1s. to 1s. 6d. to the time the birds are turned into covert.

If biscuit meal is preferred the same firm can supply the fine and the medium, both of which will be found thoroughly reliable.

The following is a list of grains and seeds useful on the rearing field:—

Canary Seed.	Hemp Seed (crushed).
Lentils.	Mustard Seed.
Millet Seed (white).	Buckwheat.
Ground Oats.	Maize Flour.
Barley.	Rice (both whole and broken).



BLACKNECKED PHEASANT.

Barley Flour.	Split Groats.
Linseed.	Sunflower Seed.
Dari.	Pea Meal.
Oatmeal.	Whole White Groats.
Broken Wheat.	Pearl Barley.
Rape Seed.	Sharps. (Fourths).
Bone Meal is a very useful adjunct.	

Some notes concerning the foregoing foods may not be out of place, hence we shall briefly refer to them in the order which they have been named.

CANARY SEED.

This is particularly valuable for pheasant and partridge rearing, but only the finest canary seed must be used for this purpose. Seed of the best quality is indicated by a bright and shiny appearance, by thin husks, the large size of the grain, and by a total absence of any musty odour. There should be no other seeds mixed with it, unless a mixture is used. Pheasant chicks thrive well on it during the first few weeks.

LENTILS.

This is a valuable nitrogenous food, and one that young game birds are very fond of. A small quantity should be given to them daily, either alone, or combined with canary seed, or these and millet.

MILLET SEED.

This forms a useful addition to the canary seed, and the same remark applies to hemp seed, only it (hemp) should be given to the young birds crushed.

Ground oats, barley, broken wheat, and broken rice can be given to the birds either dry or soaked, but

for preference by the latter method. Buckwheat is an excellent food for adult birds, but we have elsewhere referred to this. Dari seed is considered to be useful for pheasants in the autumn, in order to prevent them from straying, though, of course, the causes of pheasants straying are variable; consequently, what may prove of service on one estate will be little or no use on another.

• Partridges throughout the Year

ON a partridge manor the game preserver finds that each month provides him with something to do for his birds, and this quite irrespective of the severity or otherwise, of the weather. The watchful keeper takes into cognisance the varied conditions of preservation, and his success must necessarily be mainly based upon his due regard under such circumstances. From January the first to December the thirty-first birds have to be safe-guarded not only against the poacher, but likewise the ravages of disease, hunger, thirst, and so forth. For convenience, we shall refer to the various months of the year, indicating what measures the keeper should adopt. Commencing with

JANUARY.—As a rule either frosty or snowy weather prevails. If so the birds will have to be protected against starvation. If the snow is deep, partridges cannot scratch the surface of the ground, but if the ground is hard through frost, with little or no snow upon its surface, the birds will be able to get their living, or at any rate partly so. Partridges are very fond of seeking the hedgerows in search of berries, and seeds, and whatever fruits are on the trees within reach should be knocked down for the birds to feed upon. Supposing that the weather is particularly severe and prolonged, it will be an advantage to feed the bird on buckwheat, dari oats, wheat, or some other cereal. As a substitute, any leguminous seeds, such as peas, beans, lentils, etc., can be used. The seeds should be scattered well about, so as to prevent

the birds gathering in flocks, otherwise the probability is, they will be either trapped or shot. Prolonged severe weather makes the birds very tame, and they can usually be seen about the stack yard, therefore particular attention must be paid to such a rendezvous. Foxes, sparrow-hawks, and poachers are liable to be troublesome in January, but then what period of the year, day, or night, are foxes and poachers not troublesome? Small coverts, if such do not already exist, should be formed, as such plantations are invaluable, both for the nesting of the birds and for their protection. A number of small coverts are preferable to a large one, as the birds are then more scattered over the ground. About half-an-acre is sufficient for a covert, and such shrubs as the broom, the whin, the dog-wood, etc., should be planted, along with some stout growing grasses. Fence the covert in with wire netting to keep out vermin.

FEBRUARY.—Broadly speaking the same conditions as in the preceding month, or even the two preceding months, are likely to prevail, although February is very often marked by most severe snow-storms. If it is mild partridges begin to pair. The keeper should, therefore, note the proportion of cock to hen birds, otherwise, if the males are in excess, disturbances may occur. Differences of opinion prevail amongst game preservers as to the advisability, or otherwise, of killing off the old cock birds. In all probability the better plan, if such suspicion exists as to the males being in excess, is to turn down some hens, from birds which have been purchased for the purpose. As the French partridge has a predilection for using



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its legs in preference to its wings, consequently it not uncommonly happens, especially in clay soil, in arable fields, that the soil adheres to the feet, which become clogged with it, and the result is that these birds are very liable to be captured, especially if it has been raining a good deal, or there has been a thaw. As tillage of the soil usually commences about February, there should be an abundance of food about for the partridges, but a great deal will depend upon the state of the weather. Sometimes farming operations have to be temporarily suspended, through adversity of climatic conditions, consequently a certain amount of artificial feeding may be desirable. Vermin trapping must, of course, go on as vigorously one month as another, more especially against rats, stoats, weasels, and cats, etc.

MARCH.—In March all the birds will have paired, and the courting season will now be in full swing. If the birds have paired well, they will be found evenly scattered over the ground. Particular attention must be paid to the destruction of nests of such pests as magpies, rooks, hawks, etc., likewise war must be waged upon rats. Hedge-banks must be cleared of them, either by the ferret and terrier, or by poisoning by arsenic. The former is a preferable method, as it involves less risk, nevertheless, poisoning is greatly resorted to by keepers, many of whom use strychnine for this purpose, which ought never to be done, being as illegal as it is cruel. So far as the weather is concerned, March is a very variable month, and it may be both cold and boisterous, to say nothing of the almost constant rain, sleet, etc. If it is particularly mild,

nests will probably be found, though it is usually toward the latter end of the month before egg laying commences. During a wet season the early nests may perish. If so, this is to be regretted, as late nests, or second broods, never thrive so well, as birds which are successfully hatched at the proper season.

APRIL.—In point of importance the months of April, May, and June stand pre-eminent. Unless the utmost care is exercised during this period, there will be a dearth of partridges on the 1st of September. The keeper must be up and doing early and late, exercising extreme vigilance—ever watchful, ever ready—to prevent injury to nests and eggs. It is a good plan for the keeper to make a rough sketch of the ground, indicating the position of each nest as he discovers it. There will, of course, be a great number of nests, especially on large estates, which remain undiscovered, but by watching the birds, the keeper and his assistants will be able to mark a considerable percentage of nests, which latter must be protected by some means or other. If the eggs are removed from the nests as they are laid, by substituting artificial ones, periodical inspection of the nests becomes a necessity, or if artificial nests are made, the keeper will, of course, know their respective positions. (See chapter on "Game Preservers' Enemies.") If the birds are observed making a nest in a conspicuous place, the best plan is to destroy it, and substitute an artificial one in some concealed position. What is known as the "Euston System," as practised on the Euston Estate, comprises the removal of the eggs from the nests, and incubating these up to the time when the eggs are expected to chip. They are

then returned to the nests to be hatched by the birds. On a large estate this must give an enormous amount of trouble to the keepers, and it is difficult to see what the followers of such a system can claim in the way of advantages. A sitting partridge does not run any particular risk of molestation, excepting by man, until the time arrives for hatching the eggs, when the scent from the birds becomes most acute, therefore she is most liable to fall a victim to the predatory habits of such animals as the fox. It is a good plan to interchange the eggs of those nests at the boundary, for those which are more central or *vice versa*, and an equally good, or even still better plan, to exchange eggs with game preservers on an adjacent estate. The object of this is to give a change of blood, which results in the production of more vigorous birds. If it is a wet April and the ground is a low-lying one, the chances are that it will be an unfavourable season for partridges. Artificial rearing, may under these circumstances, be resorted to with advantage. Collect the eggs, and when a sufficient number have been gathered, place them under Silky hens, and subsequently remove them at the proper time to a dry rearing field. The French partridge is much less careful in the concealment of her eggs, so that special attention is necessary.

MAY.—During this month the keeper must watch for the birds commencing to sit, so that he will be able to make notes as to the time when the eggs are about to be hatched. The protection of the nests can be carried out in various ways, such as by the frequent use of protective fluids applied in a circle a short distance from the nests. In fox-hunting districts the

gamekeeper will have his work cut out to protect them. The nests should be inspected every morning to see if the hen is still sitting upon them, or whether she has been taken away by a fox, etc. If she has gone for good, the male bird will very often take her place, and hatch the eggs successfully. Foxes are not, however, the only enemies to fear, as hedgehogs, rats, stoats, and weasels may do a great deal of damage, the two latter to the sitting hen, whilst the former may destroy the eggs. The keeper should also note whether there are any barren pairs, *i.e.*, birds that have lost their nests, which can be determined by watching their movements. A sitting hen partridge usually feeds alone, the male bird meanwhile taking care of the eggs. Egg stealing by labourers, etc., also will have to be guarded against. It is a common practice in some localities to protect the nests with a circular piece of sheep netting three feet high and twelve feet in circumference. Four stakes are driven in around the nest, and to these the netting, which is a four-inch mesh is tied by wire. The keeper on the beat visits each nest twice a day, and reports progress. As soon as the hatching is completed the nets are collected and stored away for future use. Dogs and stray cats very often prove a great nuisance to sitting partridges, the shepherd's dog sometimes having a particular fondness for hunting after them.

JUNE.—The number of broods that have been hatched during the month of June will, to a large extent, depend upon the season. Thus, for instance, if the weather has been wet and cold, the probability is that hatching will have been deferred, whereas if it has been

a mild season early hatching may be anticipated. The majority of partridges are hatched from the middle of June to the end of it, and some in July, chiefly at the beginning of the latter. The greatest vigilance is necessary, and every nest should be inspected, if practicable, night and morning, as the birds are now in greater danger than at any other period. The sooner they are got away from the nests the better, otherwise foxes, and other crafty creatures belonging to both the furred and the feathered tribe will soon discover their whereabouts. The keeper's watchword must be "protection," as far as lies in his power. Grass cutting usually commences in the south about the middle of the month, so that a good deal of care will have to be exercised, to prevent injury to the nests, or even to the young broods. There is no doubt that this is a very anxious time for the keeper, especially where there is a good deal of meadow land, and a quantity of partridges cultivated. Nests which have been forsaken either through the death of the parents, or for other reasons demand special care.

JULY.—It will suffice to say very little about the keeper's duties this month, especially towards the latter end of it, as the birds will have the protection of growing crops, such as wheat, oats, barley, etc., although it is in this month that thunderstorms are to be anticipated. A heavy deluge of rain not uncommonly leads to serious losses amongst the broods, young birds being drowned in the furrows, etc. If all goes well, and the stock has been a vigorous one, the broods ought to grow very rapidly. Not uncommonly, disease makes its appearance amongst the young birds, and heavy losses frequently result.

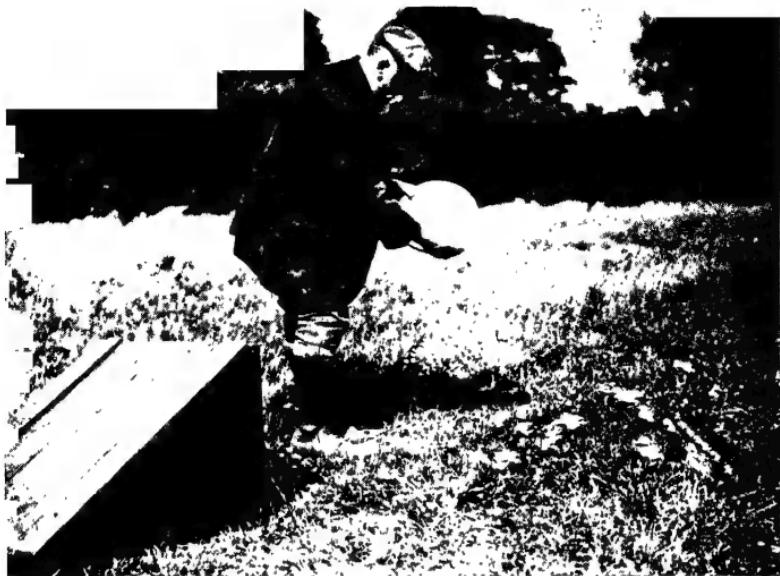
AUGUST.—Whether the young birds are well forward at this period or not, will, as previously stated, depend mainly upon the weather throughout the preceding months. As a rule, young partridges are later with their brood than the older birds, and have not had the same experience in natural protection against their enemies, though, of course, the lives of these game birds are necessarily of short duration. At the beginning of the month, the birds are usually imperfectly feathered, in fact many are deficient in plumage even at the opening of the shooting season, namely the first of September. As they are now well on the wing, their danger of destruction is materially modified, and the keeper's anxiety proportionately decreases, but this does not mean that he should exercise any decreased vigilance, but that trapping and watching should go on as usual. But let us once again emphasise what we have frequently repeated throughout this work, that it is useless to produce a good show of game, if the keeper cannot produce an equally good show of vermin, destroyed by himself and his assistant keepers. A most important operation during this month is that of scattering thorn bushes over the fields, to prevent poachers using the nets. Many keepers stake these bushes in to the ground, but this is not anything like so efficacious as a preventative of dragging nets over a field, as that of scattering them loosely about. These bushes should be cut from a thorn hedge during the winter, or early in the spring. The difficulty of drawing a net in the latter case is very much greater than in the former, and is now more generally practised. Removal of the bushes by

poachers must be watched for, whilst poachers watching for coveys alighting for the night, must also be shadowed. All sorts of ruses are adopted for this purpose, so the keeper must not be misled by appearances, which may subsequently prove very deceptive.

SEPTEMBER.—With the advent of the first of September the slaughter of partridges is legally authorised, though it is a wise procedure for sportsmen not to commence shooting until the latter end of September, or even October. Although this delay, like that of a covert shoot delayed until January, materially increases a gamekeeper's anxiety, it has the advantage of providing better sport, and better birds when killed. It is ridiculous to see the small birds which are sometimes shot on St. Partridge's Day. These remarks, however, do not apply with equal force to birds which are walked up to, and those which are driven. If shooting is deferred after the second, or third week of September, when dogs are used, the birds will become far too wild for successful sport to be obtained, but with driven birds it is quite a different matter. The methodical keeper will study the turn of his ground, and devise the best methods for the commencement of the various drives, modifying his arrangements according to the prevailing conditions of the wind, and so forth. (See "Shooting Over Dogs," and also "Partridge Driving.)

OCTOBER, NOVEMBER, AND DECEMBER.—During the next three months the gamekeeper's duties mainly comprises the arrangement of the drives, more especially during October, during which month partridge driving ought to be in full swing. The prevention of poaching, either by stalking or by netting, is one

of the keeper's chief anxieties, though in spite of his alertness, a certain amount of it is practically inseparable from game preservation, more especially on shoots in the vicinities of collieries, the collier being, unfortunately, too much addicted to this illegal form of sport. Many a keeper has lost his life through the reckless behaviour of the inveterate collier poacher. If there is reason to suspect depredations being committed by a gang of such desperate characters, the keeper should adopt such measures as will ensure him against maltreatment, which he can do by the aid of the local police, assistance from adjacent estates, and by the use of a couple, or three, powerful night dogs, as there is not the slightest doubt that a well-trained night dog or two, is of the greatest value to a keeper, as there is nothing which poachers fear so much, as the presence of these animals. The writer maintains that every master ought to provide his servant with such an animal or animals. Driving is continued in November, although the birds will be very wild. Where covert shooting is indulged in, the partridge drive should be in the morning, say up till lunch-time. Fogs are likely to prevail in November, if so the poacher may take advantage of this. French partridges are very fond of skulking about the hedgerows, therefore the latter should be searched by dogs. We have previously referred to the accumulation of mud on the feet of French partridges, though we forgot to mention that the same thing may occur to broods, especially on wet and clay soil. Numbers are lost every year through this cause, so the keeper must pay particular attention to any stragglers amongst the broods. We have now



FEEDING YOUNG PHEASANTS.



YOUNG PHEASANT.

completed the cycle of the year, although in a very cursory manner, and perhaps not given any information which the majority of gamekeepers or game-preservers do not already know. Nevertheless the author hopes that the remarks will be found of sufficient interest to refresh the memory, and to increase the activity of the keepers' resourcefulness, as the latter qualification, combined with that of tact, keen observation, perseverance, and industry, are some of the game-keeper's chief attributes.

Rearing Partridges on the French System

As the rearing of partridges on what is designated as the "French System," is successfully carried out by many game raisers it constitutes a feature of interest to the keeper, and therefore we have taken the liberty of reproducing a practical and valuable contribution upon the subject which appeared in Volume IX. of the "Gamekeeper," from the pen of "Lowlander," which is as follows:—

" That a good many have been successful with the French system does not alter the old-established rule one wit, this rule being never to interfere with the partridges in the least if there exists a chance of them hatching their eggs under natural conditions. I would never advise a keeper to attempt the system except in a district where foxes, and a good many of them,

have to be contended with ; elsewhere to carry it out is to undertake unnecessary labour and expense. First of all I advise anyone going in for the French system to utilise imported partridges, because the catching and then handling they have undergone has somewhat tamed them. If they are procured early, kept in movable pens, and carefully tended, the birds will get even quieter and more docile. Caught-up English birds may possess more vigour, but it requires a long time to accustom them to life in a pen, and I have never succeeded so well with them. As it would never do to roof pens against storms, it should be remembered that partridges therein suffer just as much from heavy rain as those nesting at liberty.

For this reason the site for the pens must be selected with the greatest care, the principal object being to secure one from which the rainfall will quickly disappear. There must be no likelihood of water accumulating on the surface to drown the nests. It is on a heavy soil that sitting partridges suffer most from excessive rains, and on estates largely composed of a stiff staple there is sure to be an increased disposition to carry out the French system, if only in hope of preventing losses from the cause stated. But a site where the rain will quickly percolate through the soil is difficult to find, and in many cases actually not available. If this is the case there is no choice but to incur the additional expense of thorough artificial drainage. Even if this is done, it is sometimes not effective, because the water is carried off too slowly. Deep drains should be avoided, six inches beneath the surface being a sufficient depth for them. Water

reaches drains from the surface by means of holes made by worms and insects of other kinds, but the partridges soon clear off these, and the holes become non-existent ; consequently drainage is slower within the pens than elsewhere. I have known a rearer erect his block of pens upon a gentle declivity, consoling himself with the reflection that the rain will run off. So it does, from the upper pens to the lower, and the state of the birds in the latter is not to be envied. Such a drainage as this is not the right description, and is a poor make-shift. If the pens are on the side of a hill I strongly advise a ditch to be dug the whole length of the side, so as to intercept all water running towards them. It should not be forgotten that as a partridge usually forms her nest in a slight depression it really acts as a reservoir, and a very small accumulation of water is sufficient to ruin all the chances of a brood. This question of drainage is one of the most important in connection with the system, and although the necessity of it may not become apparent during a dry season, it will be the reverse a wet one.

" An airy site is also required, but, at the same time, there must not be too great exposure. Partridges love shelter, and it is seldom a natural nest is found in a spot lacking protection from cold winds. In fact, a site high, dry and sheltered is a long step towards success.

" Another precaution which must be observed is to keep wild partridges away from the pens, and this is hard to insure. The confined birds are naturally objects of interest to the others, and the wild cocks are peculiarly persistent, especially any which may be unpaired. These latter should be destroyed, or,

better still, caught up and taken right away. Wild partridges flying on and around the pens interfere greatly with the proper mating of those birds in the pens, the cocks always challenging each other and even fighting through the wires. Far on into nesting this sort of thing will continue if not checked, and it has been the means of utterly ruining results. There is sure to be some place on an estate which wild partridges are not fond of frequenting, and, other conditions being favourable, the pens should be erected there. Be careful not to litter food about outside so as to attract other partridges to the pens, and have the mesh of the netting of a size to exclude small birds, as these carry food from within and drop it about outside. The question of food for the partridges is a rock upon which the hopes of many a keeper carrying out this system have gone to pieces. He is too inclined to feed the birds like he does his pheasants. First of all, partridges do not require half the food, and as their natural fare is to a large extent insectivorous they need a large supply of meat in some form or other. Seeds are better than too much corn, and these should be varied as much as possible. Avoid giving maize too often, and substitute small peas, commonly known as partridge peas. The latter are much appreciated. The food bill for partridges penned all through the winter is astonishingly small ; that is, if supplies be given carefully and waste not allowed. The cost of keeping the birds is certainly half that necessary to maintain pheasants. If the birds are not in good condition towards the pairing season matters do not go smoothly, so the utmost attention is required.



A PROMISING BATCH OF YOUNG PHEASANTS.



FEEDING PHEASANT CHICKS.

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"Shut the pairs off as soon as it is seen that they have mated, or the most terrific fighting will occur, and the birds injure each other seriously. Constant oversight is needful while pairing is in progress, and yet there must not be too much interference. Great tact may be shown in superintending the birds at this important juncture, and experience is the best teacher as to how far the attendant should venture.

"The trapping of vermin must not be neglected in the slightest, for the harm a stoat, weasel, or few rats will work in an hour or so cannot be realised except by those who have experienced it. If there are drains, the mouth of each should be covered with a grating, so as to exclude rats and mice, for the former kill the birds, and both attract stoats. Moles must all be caught in the field where the pens are situated, for their runs are well-used highways for weasels and small stoats, and often lead these vermin to the pen. Traps must be kept constantly set close to the pens, particularly at each of the corners, and also at every spot at a distance where vermin on their way to the pens may be intercepted. Adjacent fences should be kept full of traps, and no effort to destroy vermin must be spared. Wire netting is no barrier to a stoat, for he will climb over with the greatest ease, and even if the mesh is too small for him to get through, and the pens roofed in with it, he will creep about till he does find a convenient loophole. Foxes and dogs are best kept away by a tall and strong netting fence encircling the pens at a distance of at least forty feet.

"Pure water cannot be done without, and if a constant supply by means of pipes can be maintained

it will prove a great advantage, for partridges are thirstier birds than may be imagined. Water which has been heated by standing in the sun the birds detest, and I am convinced it is positive poison to them.

“ Finally, I should like to warn readers not to allow their expectations to reach too high a pitch, for even if they are successful in turning out a nice lot of broods the birds are not reared. In a country infested with foxes the dangers the broods have to face are formidable, and by no means to be reckoned lightly. Something has been gained by insuring safe hatching, but losses are certain to occur between that event and the opening of September.”

The Game Preserver's Enemies

THE game preserver has many enemies to contend with, in addition to disease, poachers, etc., belonging to both the fur and feathered tribe, which, if not kept down, will assuredly tell a tale when the shooting season commences. The best evidence of a game-keeper's activity throughout the year, can be learned by reference to the gamekeeper's larder, which consists of the vermin-pole, and which, if well filled, is positive proof of his assiduity. It is only by a close study of the natural history of the various animals, and birds, that a game preserver can ever hope to deal successfully with such enemies. The predatory habits of some of these four-footed creatures require both tact and keen discernment, ere they can be brought to the trap. Traps and trapping really constitutes an art, and one of a somewhat extensive order. Nevertheless, the author will endeavour to give a *resume* of the principal facts in connection with this art. It is somewhat singular that gamekeepers are not always unanimous as to the destructive influences of certain birds and animals. Thus, for instance, some time ago a great deal of controversy arose as to the harmful and harmless nature of the kestrel. Naturalists have always regarded these birds as harmless to game preservation, a view which does not appear to be a tenable one, as many gamekeepers have given indisputable proof, that kestrels may resort to preying upon young

pheasants, partridges, etc. In fact, they have actually been shot in the act of carrying these birds away from the rearing field. Whether the kestrel would commit such depredations if other food were plentiful, is a matter difficult to decide. It certainly has not the same rapacious desire as the sparrow-hawk, which is one of the worst enemies of the feathered tribe that the gamekeeper has to contend with. Macgillivray, in his excellent work on "British Birds," makes some useful remarks concerning the kestrel, which he regards as not being an enemy of the game preserver, although fully aware that the advice he tendered to gamekeepers, as to the innocence of the kestrel was not appreciated, or if appreciated, ignored, as proved by the birds which he saw had been destroyed. Examination of the digestive apparatus revealed to this naturalist, that the food of these birds consisted principally of mice, either of the domestic or field varieties.

Concerning this matter he says:—"The food of this species consists chiefly of mice, *mus sylvaticus*, *mus domesticus*, *arvicular agrestis*, and shrews. But it preys on many other animals, and in the numerous individuals which I have opened, I have found the remains of young larks, thrushes, lapwings, and several small birds, both granivorous and slender-billed, together with many other worms and insects. It is also said to feed on lizards, and it has been known to carry off young chickens. Mice it sometimes swallows entire, more frequently breaks into two or three portions, but the birds, if fledged, it generally plucks."

The foregoing points out that the kestrel has been known to carry off chickens, therefore it is reasonable



FOUR YOUNG PARTRIDGES IN HIDING.

to assume, that it would have no misgiving in carrying off young pheasants from the rearing field. The deductions are, that these birds are comparatively innocent, and the good they do far over-shadows the trifling losses they cause to the game preserver. The kestrel builds in rocks on the coasts, in ruins of buildings, and in trees, sometimes taking possession of a deserted nest of a crow or magpie. The eggs are reddish orange, or reddish white splashed with brownish red. It is more numerous in England than in Scotland, and still less frequent in the North of Scotland.

Another bird that has been regarded as an enemy of the gamekeeper, by some, though not by all, is the little owl, which was originally rare in Great Britain, though common all over Europe. Naturalists turned out large numbers of them in their native woods and grounds, so that they have become fairly common. They have not the same nocturnal proclivities as the other species of owls, and can be seen about in the day time. In all probability the little owl is an even more innocent bird than the kestrel. Its food consists of mice, small birds, and insects, and it retreats into old buildings, towers, churches, and barns. A keeper writing in the "Gamekeeper" for October, 1911, says that he can testify from personal experience that he has seen the little owl carry away both young pheasants, and partridge chicks, and has also found this same bird sucking the eggs of a wild duck, which had built her nest in a tree trunk. The rapacious habits of the magpie, the sparrow-hawk, the jay, the jackdaw, and the hooded crow, likewise the common crow, are well-known to every gamekeeper, and it is indisputable

that they can do a tremendous amount of damage, unless they are kept in check, both by the destruction of the birds themselves, and their nests, and eggs. As to which of the foregoing birds are the worst, the writer thinks that the magpie and the sparrow hawk occupy first place, the jackdaw and the hooded crow being good seconds. None of the owls can be regarded as really serious enemies of the gamekeeper, as their food almost exclusively consists of rats and mice ; therefore there is no necessity for the keeper to destroy these birds, which really rank first and foremost amongst the farmers' friends. They need all the protection they can get, and the more they are encouraged to breed, the greater the destruction of the smaller rodents named. The sparrow-hawk preys upon partridges, young pheasants, young rabbits, field mice, larks, blackbirds, thrushes, and various other small birds. In fact, it is not very particular as to what form its prey is, provided that it is sufficient to supply it with a meal. It is a difficult bird to trap, and certainly not an easy one to shoot, owing to its wily behaviour. Nevertheless an enormous number of these hawks fall victims to the gamekeepers' guns every year. Special traps have been designed for taking these hawks, either alive or dead. Spring traps are invaluable for both feathered and ground vermin. The great secret in all trapping operations, they will be found thoroughly efficient, and their price is reasonable. The decoy hawk traps are useful on moor, mountain and in covert. The decoy birds, such as two or three sparrows, are placed in the lower compartment of the trap, which latter should be placed in some very conspicuous position

early in the morning, or just before dark, as these are the principal times of the day when the hawks are searching for food. It is usually considered that hawk trapping can be most successfully carried out after July, this being the period when young birds have to look about for their own food. Instead of the small birds as decoys, the sparrow-hawk can be substituted, as one hawk readily attracts another. Bearing this in mind, a steel trap, with a hawk in it, will help to catch others, provided that other traps are set round about it, but they must be properly concealed, otherwise they will fail to effect their purpose. On the rearing field they are very destructive, and the game preserver has to keep a very sharp look-out for them, especially when the pheasant chicks are released from their coops early in the morning. As one means of protection against their deadly attacks, it is expedient to allow the hen out of the coops along with the young birds, as she is able to protect them effectively against the sparrow-hawk's assault. An additional security is afforded by the keeper concealing himself with his gun, ready to give the visitor a welcome.

The magpie is a most destructive bird, and thoroughly hated by the keeper. It is a bird that is familiar to every gamekeeper, and is common in the cultivated, and wooded districts of England, and Scotland, although these birds cannot be considered as numerous. Its food consists of young birds, eggs, especially those of the partridge and pheasant, fruit of different kinds, slugs, worms, carrion, grain, etc., to obtain which, it searches hedges, thickets, fields and orchards. It is about the same size as the jackdaw, but rendered very

conspicuous by its black and white plumage, and its long tail. It makes a loud chattering noise amongst the trees, and it is very fond of being in the neighbourhood of human habitations, and becomes bolder through encouragement. It is one of the best plumaged British birds, and it is a pity that it has attained such an evil notoriety. It is a difficult bird to trap, and the skill of the gamekeeper is often taxed to the utmost. A steel spring trap, well concealed, and baited with an egg, is the best form of allurement for the magpie. In passing it may be advisable to mention, that it is extremely dangerous for a keeper to lay poisoned bait about, for the destruction of his feathered enemies, and quite illegal in England, though allowable in Ireland, provided certain conditions are fulfilled. All sorts of accidents are likely to happen under these circumstances, more especially in hunting districts. Trapping and shooting are the only authorised, and legal methods, through which the game preserver can wage war against such undesirable visitors, and this he must do spring, summer, autumn and winter. The mammalian animals which cause trouble are the fox, dogs, cats, rats, weasels, stoats, hedgehogs, and badgers, although the last-named are not of much account, so far as the damage they do is concerned. On some estates, cats, are extremely troublesome, and numbers are shot every year. Once a cat takes to poaching it is impossible to wean it from the habit, and it is almost sure, sooner or later, to receive a full dose of powder and shot from the keeper, which is about the best thing that can happen to it. The offences of the hedgehog are very venial, compared to those of the other aggressors,

more especially the stoat, and the weasel. The chief damage which dogs are likely to do in a game covert, is that of disturbing the birds, which they are liable to hunt about. Many a dog has received its quietus from the keeper through its poaching proclivities, although it is manifestly illegal for any gamekeeper to shoot a dog, unless the animal is actually caught in the act of slaying a rabbit, hare, pheasant, partridge, etc. The hedgehog has been blamed for destroying eggs, some keepers having actually caught the culprit in the act of such destruction. The greatest enemy the keeper has to contend with, especially in hunting districts, is the fox, which it may be necessary to preserve just as much as the game, in fact, even more so. For a keeper to commit vulpicide, where foxes are preserved, is regarded as one of the worst actions that he can perform. Of course, in non-hunting districts the matter is different, and the game preserver uses his most strenuous efforts to exterminate foxes. During covert shooting, foxes frequently prove of very great annoyance, as by being disturbed they may drive the birds in front of them, and put up a great number at the same time, and thus to a certain extent spoil sport. Although the preservation of game and that of the fox are diametrically opposed, a keeper can, by the exercise of good judgment and tact, carry out the wishes of his master successfully. It is a matter of common sense, that where game, rabbits, etc., are plentiful, a fox will not take the trouble to visit hen-roosts, and that where foxes are abundant, their foraging expeditions must be attended with a considerable decrease in the number of birds which have been reared.

One of the best tests for a keeper's abilities is to be able to show plenty of both foxes and game. Fortunately the majority are able to do this. Foxes do the greatest damage during the time the birds are sitting on their eggs, more especially when hatching commences, as it is at this period that they can most readily detect the nests, owing to the scent from the same being greater after hatching has commenced. On the rearing field, foxes may give the keeper a great deal of concern, taxing all his ingenuity and resourcefulness to keep them from playing havoc with the birds. But it is not only on the rearing field that Reynard causes so much anxiety, but likewise when the young birds have been removed from the latter to the covert. Some keepers, as a preventative against the destruction of the young birds by foxes, enclose certain sections of the covert with netting, where the young birds remain, until such time as they are able to fly above the netting, when, of course, they are better able to take care of themselves. A hundred and one devices, some ingenious, others not so, have been, and still are employed by game preservers for protecting game against foxes, whose craftiness is proverbial, but, by the exercise of diligence and resourcefulness, the fox can be outwitted. It is not for the writer to dictate the measures which keepers should adopt for the purpose, or to recapitulate what may be already known to some, though not to all readers. Pungent substances, or perhaps it would be better to say evil-smelling applications, are commonly used for protecting nests, but these have to be frequently re-applied during wet weather, but in dry weather and as the temperature

increases, the obnoxious odour emitted from the application becomes more potent. Nearly all game food manufacturers supply a fluid for this purpose, a small quantity of which should be applied in the form of a circle, a short distance from the nest, so that when a fox is on the hunt, he will not be able to discover the sitting bird, as any scent emitted from them will be completely over-shadowed by the obnoxious odour from the fluid. The same substances are used for "tainting" out rabbits, and prove very efficacious for this purpose. Luminous paint is a very useful agent for the protection of nests, its phosphorescence being a good scare for foxes, and it has the advantage of being permanent. Either square or circular pieces of tin or zinc, say six inches in diameter, or even smaller, should be painted, when required for use, two or three of these slips are stuck into pieces of stick, slit at one end to receive them, and sharpened at the other, to penetrate the ground, and placed in such positions as the exigencies necessitate. Luminous disks can be obtained for about £3 per 100. The sticks should be about six inches in height, and the non-luminous side of the zinc-foil looking in the direction of the nest, thus preventing the sitting bird from being frightened. Two or three of such devices will be sufficient to protect each nest, provided they are put in the proper positions. Another method for affording protection to the nests, is to surround them with netting, but this is sometimes a troublesome matter, owing to the situation of the nests. It is of interest to note that pheasants and grouse have a particular fondness for making their nests close to path-ways, in rides, etc.,

and around the borders of coverts, whilst partridges commonly nest in hedgerows, especially on the fringe of the bank, instead of in the denser and more protected portions of it. When nests are placed so close to the line of traffic, they are exposed to many dangers, not only of predatory animals, but from the risks of being robbed by labourers and others. When the sitting hen is on the nest, she affords a better protection to it than when off, as the colouring of her plumage so completely harmonises with the surroundings. An additional means of protecting nests can be carried into effect, by the keeper making artificial nests, and placing in each nest say a couple of artificial eggs of either the partridge or pheasant. These should be placed where the birds are likely to see them, yet sufficiently concealed, and in such positions, as will afford them the greatest degree of protection against enemies. By such a systematic arrangement of nests, the keeper is saved a lot of worry, and he can visit the nests daily so as to note the progress of events. There is not, as a rule, much difficulty experienced in persuading the birds to lay in the nests, but after about half a dozen eggs have been laid, it is expedient to remove the artificial eggs, otherwise their presence in the nest in juxtaposition to the other eggs, may render them, or some of them, unfertile. This fact must always be borne in mind, because damage will, in all probability, result. It is, however, a general practice amongst pheasant preservers to remove the eggs as they are laid, leaving only one or two in the nest. Egg collecting goes on throughout the season, and the eggs are then hatched beneath hens, or else incubated beneath the

FEEDING TIME, PEGGING OUT THE BROODY HENS.



latter, until they begin to chip, when they are removed to the incubator, to complete the process, and to dry the chicks. Artificial eggs may be left in the nest to replace those which have been taken out, but it is better not to remove the whole of the eggs, allowing one or two of the natural ones to remain. Partridges can be reared in the same manner, though this artificial method of rearing is not practised to anything like the same extent as that of pheasants, whilst for grouse it has been done more as an experiment than for anything else. Yet it has been shewn that grouse can be reared under such artificial conditions. It is not, however, likely that artificial rearing of grouse will ever partake of a practical character. Eggs hatched under perfectly natural conditions do, without a shadow of doubt, produce more vigorous birds than those derived from penned birds, and there is always a ready demand for such eggs.

As previously stated, the fox is a troublesome enemy on the rearing field, in localities where they have to be preserved, therefore the question is just as important, in fact even more so, than that of the nests and eggs. Further, the protection must extend to the coverts, until such time as the young birds have been able to go to roost in the trees. It is at this period that great losses often occur, through the jukking of them, the existence of which fact causes the keeper a good deal of anxiety. Yet, in spite of all his anxiety, losses are bound to occur. To persuade the birds to roost as early as possible after they go into the coverts, constitutes one of the best safeguards. Keepers adopt various methods for such persuasion. As to what is the best plan must be left for the keeper to decide. Protection, after removal from the

rearing field to the covert, can be afforded by enclosing sections of the covert in wire netting, say netting eight feet in height, with about a couple of feet of the upper part bent over at the top, so as to prevent a fox from climbing over. To support the bent over netting rods should be fixed to the upright standards for attaching the netting to. The netting should also project about a foot under the ground, so as to prevent foxes from forcing their way in below. It is no use to bend the netting over at the top if the bottom is not secured. The netting must, however, be very securely fastened, and the upright supports should be rather close together, otherwise the netting will become slack, which a fox may take advantage of. The wire netting used should be a four-inch mesh, and strongest gauge which is particularly suitable for a partridge covert, as partridges are able to pass in and out of the netting. It is necessary to bear in mind that hand-reared pheasants are much more liable to fall victims to foxes when they are turned into the covert than those which are reared under natural conditions.

So far no reference has been made to the presence of a mangy fox, or foxes in a covert, which may become a much more formidable foe than a healthy fox, the reason for this is owing to its total disregard for the various measures adopted, to prevent its depredations. A fox affected with mange, is consequently on the hunt, and makes wide excursions in search of prey. When a fox has a skin disease, or rather a keeper has suspicions that it has, the sooner it is put out of its misery the better. Mange in the fox is a parasitic affection, and transmitted by direct and indirect means from one fox

to another. Thus, for instance, the earth inhabited by one, is liable to communicate the disease if visited by a healthy fox. This is "indirect" infection, direct transmission being by actual contact. Regarding the vixen and her cubs, a great deal might be said, as she requires to be tactfully dealt with, and, if necessary, fed. She will require freshly killed rabbits, or rats, or else herself and family should be removed to ground where rabbits are plentiful, although she will not prey upon those in the immediate vicinity of her own lodgings, preferring to leave the home supply for the benefit of her cubs, as soon as they have severed themselves from the parent. An artificial earth can be made for this purpose, and means must be adopted to compel the vixen to vacate her old abode, and take up residence in the new one.

The weasel, and the stoat, are two deadly enemies of the game preserver, and when they are abundant, which they certainly are during particular seasons, and on certain estates, where vermin trapping has been neglected, it will be an impossibility to carry on successful game raising. Keep down the vermin, and the stock of pheasants, partridges, hares and rabbits will be much improved thereby. The keeper has to exercise considerable ingenuity in the trapping of these pests, as the traps must be carefully baited and concealed, but the bait must be fresh, otherwise it is no use. Stoats nearly always follow the line of offence, by a ditch or a stream, therefore it is along such tracks that the traps should be set. The animals last-named, like the ferret and pole-cat, are subject to distemper, and it is quite possible that the prevalence of such a disease amongst them, may help towards

their extermination, or, at any rate, to a diminution of their numbers. Concerning rats, against which the gamekeeper is continually waging war, there is no doubt that the commonly adopted plan of poisoning them with arsenic is the most successful, although it is, of course, attended with a certain amount of risk to the birds, but if properly carried out, such risk is reduced to a minimum. During a dry season rats are not so abundant, seemingly preferring a wet one. It is a pity that farmers do not co-operate more towards the extermination of these vile creatures, which are dangerous alike so far as disease transmitters are concerned, to man and animals. Steel traps and wire traps, and snaring can all be used for the destruction of rats, but none are as efficacious as poisoning. Rat Virus is extensively employed on some estates, but the writer does not consider that it has the same utility as arsenic. White arsenic, or arsenious acid, is a very deadly compound of arsenic, and difficult to obtain, owing to the Poisons Act. Therefore a keeper will have to make special arrangements to obtain it. It is extremely cheap, and when used, it should be mixed with oatmeal for preference. Extreme care must be exercised to keep it out of the way of domestics and children, in fact, it must be kept under lock and key in some outhouse, to prevent any accident occurring. Unless the rats are kept in check the nests will suffer severely, and so will the young birds. Hedgehogs must also be destroyed as there is abundant proof that these are enemies of the keeper, and precisely the same remarks are applicable to cats.



YOUNG RED-LEGGED PARTRIDGES.



PHEASANT CHICKS.

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Shooting Over Dogs

SHOOTING over dogs, or dogging a moor, as it is more popularly termed, is a subject of considerable interest, both to gamekeepers and to sportsmen. Since the advent of driving game birds, the utility of the Pointer and the Setter has been curtailed. The results derived from the two systems cannot, of course, be compared, and the majority of younger sportsmen regard shooting over dogs as quite out of date. Nevertheless, there are some men who still prefer the healthful and invigorating exercise resulting from walking up the birds—whilst on certain moors any other form of sport is impracticable. It is to be hoped that the Pointer and the Setter, no matter whether English, Irish, or Scotch, will continue to be kept in shooting establishments, wherever their services can be economically and efficiently employed. It seems almost superfluous to say that the possession of thoroughly broken Pointers and Setters constitutes fully more than one-half of the pleasure of the sport, though unfortunately many sporting dogs are more or less a failure. A perfectly broken dog is a luxury, so much so, that very few sportsmen will part with such an animal at any price. Although customary at one time to allow both Pointers and Setters to retrieve their birds, such practice is no longer indulged in. Therefore, to accompany these sporting dogs, a clever retriever should form part of the equipage. There are two points of particular importance in shooting over dogs, namely, that of always working them "up wind," and, secondly, to commence

shooting partridges early in the season, so that there is plenty of cover for the birds, especially amongst the mangels and turnips, otherwise the birds become very wild. Given plenty of birds, plenty of cover, and well broken dogs, the sport ought to be good. If the birds have been much disturbed, the season a late one, and there is very little cover, poor sport may be anticipated, excepting with driven birds. As previously stated, no dog can work satisfactorily running "down wind," neither can partridge shooting be carried out satisfactorily during wet or very windy weather. Amongst the root crops, the best plan is to work across the drills, and not lengthwise, but a great deal will depend upon the direction of the wind, and other factors, such as the ground, which can only be determined by the handler of the dogs. The grass and the stubbles should be worked before the roots, so as to give the birds a chance to settle in the latter. In partridge shooting, close and slow ranging is the best, whereas on a moor, a dog requires to be fast and range rather widely. As a rule, one good Pointer or Setter will be sufficient for each two guns, and as each covey is broken up they should be marked down where they re-alight. Keepers usually find very little difficulty in carrying out a successful shoot over dogs, provided that it has been a good season, and an early one.

Some Diseases Affecting Game Birds

GAME BIRDS, no matter whether under natural or artificial conditions, are, like animals, subject to a multiplicity of diseases. In order to prevent such affections, or to adopt precautionary measures with a view to curtailing the spread of some of these affections, it is necessary that the game preserver should make himself acquainted with some of the chief ailments incidental to his birds.

It must be borne in mind that a malady may be rife in game preserves, but at the same time, there is a possibility that other birds, quite outside the sphere of game preservation, may also be implicated in the disease, or perhaps may have been the channels of its introduction. Unfortunately, the game preserver has to contend with so many agencies outside the sphere of his control, that once an infective disease becomes established it may be beyond his power to check its progress.

The freedom of intercourse and the gregarious nature of certain birds, are factors which tend towards the dissemination of disease. Isolation and disinfection always play a prominent part in the control of infectious diseases, and whilst the keeper may be able to carry out the latter, the former he can only do in a very incomplete manner. The *media* of infection may be so numerous and of such an apparent trivial nature, that the keeper unwittingly ignores their existence.

Broadly speaking, the infecting *media*, in the case of an outbreak of disease amongst young pheasants or partridges comprise wind, water, various rodents such as rats, weasels, stoats, mice, badgers, rabbits, etc., the young birds themselves, their ejecta, infected food, infected drinking vessels, feeding boards, nest boxes, broody hens, coops, infected ground, the boots, clothing, and hands of the keeper, and various birds, such as sparrows, starlings, rooks, jackdaws, in fact, any wild birds. These are, collectively and individually, alike liable to become the transmitters of disease. As previously stated, it is the facility or freedom with which intercourse takes place, that so largely augments the dispersal of germ and parasitic diseases.

Climatic conditions, doubtless, play an important *role*, either in the form of excessive rain, or prolonged drought, diseases being usually more prevalent under these circumstances.

The gamekeeper has so many enemies to contend with, apart from the ravages of disease, that it behoves him to adopt every precautionary measure within his power in order to mitigate his losses through disease. Some localities have obtained a notoriety for the prevalence of certain diseases, and it is not uncommon to find the rearing of pheasants abandoned for several seasons, owing to the heavy losses that have been sustained. Abstinence under such circumstances is the best safeguard, and certainly the one best calculated to promote the keeper's welfare.

Young birds are more liable to suffer from disease than the adult ones. A negligent keeper is much more likely to initiate trouble, than one who exercises both



A WOODLAND SECRET REVEALED—SPARROW HAWK AND YOUNG.
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forethought and diligence. A young keeper, learning the art of game raising, should make himself thoroughly acquainted with all the details of his work, and never allow failure to outwit his resourcefulness. Perseverance and industry constitute a great portion of the economics of success, and whilst endeavouring to make his own deductions, should follow on the lines which the experience of others has laid down for him.

Disease is sometimes transferred from one rearing field to another, through keepers on adjoining estates paying friendly visits, or it may be brought on the premises through broody hens coming from farms or poultry yards, where very little attention is paid to such matters. A disease which may affect pheasants will sometimes extend to partridges, or *vice versa*.

There are many diseases of poultry which are readily communicated to game birds. In fact, it may be accepted as a general truism, that all members of the *gallinaceae* are liable to suffer from the same or allied affections. On the other hand there are certain maladies which affect both man and animals that are capable of producing allied diseases in game birds. Two afflictions may not inappropriately be termed the scourges of the game rearer, which are Infectious Enteric and Gapes.

During some seasons, thousands of pheasant chicks die from the first-named malady, whilst gapes causes enormous losses annually, both amongst pheasants, partridges, poultry, etc. Both diseases are more prone to attack the young, and once they gain a foothold on the rearing field, the keeper will find his losses severe.

Masters should not too hastily attribute such losses to the keeper's incapacity, as both the affections will sometimes make their appearance in spite of every precaution.

The chief difficulty lies in detecting the origin and source of the outbreak, whilst delay in the recognition of the trouble materially contributes to the death roll.

Enteric may be defined as an infective germ disease, sudden in its attack, rapid in its development, and deadly in its effects. Sometimes it destroys birds with remarkable rapidity, so rapidly in fact that the keeper thinks the chicks must have been poisoned. The suddenness of attack, and the swiftness with which it proves fatal, render it analogous to anthrax in animals.

The suddenness of the attack, its infective nature, and fatal termination, must be looked upon as the most significant indications of this trouble. The lungs, intestines, and liver are the structures most markedly affected when the birds are examined after death. The lungs are inflamed, sometimes engorged to complete blackness ; the gall bladder is distended to its utmost. The liver is congested, whilst the bile-stained condition of the flesh and the tissues around the liver are, usually, plainly manifest. The intestines are the seat of acute inflammatory patches, sometimes involving their mucous lining only, at other times extending throughout the wall of the gut.

Sometimes the birds scour severely. In some instances they appear to be all right when fed in the evening and shut up, but on opening the coops on the following morning, three or four dead ones may be found in a single coop.

If this malady has prevailed on the rearing field, say, during the previous season, it will very likely be rekindled in the succeeding one, hence the inexpediency of rearing birds upon the same ground in consecutive years. If no other ground be available, it should be ploughed, top dressed with lime, and subsequently re-sown.

As we have previously pointed out, there are reasons for believing that the attendants on the rearing field may, after handling dead birds, carry the contagium by means of their hands, etc., to healthy birds, either directly or indirectly. Therefore, this shews how necessary it is to act guardedly. The dead birds should be burned, the hands should be washed in some disinfecting solution, whilst the coop and its occupants, from which the diseased birds have been taken, should be removed to an isolated section of the field, though previous to this the coop should have been thoroughly cleansed, and, if there are any sickly birds in it, the **most** economical way is to destroy them.

Place all the other coops well apart, so as to keep the broods as much as possible from association. Where extensive pheasant rearing is carried on, the chicks will sometimes die by the hundreds. The advisability of shifting the birds to fresh ground, must always be considered, but it must be borne in mind that it is next door to useless to transfer sickly birds on to fresh pasture.

Enteric is one of those maladies in which prevention must play the most significant part, as the curability of the complaint is of more than a doubtful nature. The stamping-out system must be as rigorously enforced as possible.

There are many nostrums advertised as remedies for this trouble, but there is no reason to believe that they do either good or harm, unless it be the former, so far as the proprietors are concerned.

Another disease, though of a less virulent nature, is that known as Gapes, which has been so named owing to the gasping, or gaping for breath of the victims. Young birds are the chief sufferers, and the trouble is due to the presence of Thread or Gape Worms (*Sclerostoma Syngamus vel Trachealis*) in the throat. These thread worms take up their habitat in the windpipe, and bronchial tubes, where they set up considerable irritation, in short bronchitis, which commonly leads to consolidation of the lungs, particularly in pin-head-like patches.

The thread worms are about half an inch in length, of a blood-red colour, and have a forked appearance, due to the male and female being attached. Partridges, pheasants, peacocks, sparrows, and various other birds are troubled with it. Most of the worms are attached by their mouths to the windpipes, and a very small point often forms at their place of attachment. Two or three worms are sufficient to kill a young bird, but it would probably require a score or more in the case of an adult pheasant. The eggs (*ova*) are developed in the uterus of the female, and escape from this when the female worm undergoes decomposition. The *ova* falling upon damp ground will, under favourable circumstances, develop in from seven to forty days. It has been shewn that there is no necessity for an intermediate host to complete the development. Birds have been compelled to feed on the *ova* (eggs)

containing embryos, and, in seventeen days adult worms have been found in the windpipe, but it has never been demonstrated in what manner these thread-worms migrate from the digestive to the respiratory tract.

This trouble is most prevalent during moist warm weather, which is exactly parallel with the allied trouble in calves—husk or hoose. An observant keeper will readily detect Gapes when the coops are closed in the evening if he listens attentively, when he will hear a wheezing or gaping sound emitted.

The mortality from gapes is, in some seasons, considerable, and in order to diminish losses from this complaint, game rearers should keep their coops on the highest and driest of pastures, whilst the affected ones are treated either by fumigation or by the individual application of a feather down the throat, previously dipped in a mixture of one drachm each of spirit of camphor, and oil of eucalyptus, blended with six ounces of olive oil. Game food manufacturers have usually a remedy for Gapes, and some of such remedies are apparently successfully employed, but the Gape Worm is sometimes difficult to eradicate. The basis of the cure depends upon the degree of irritability which the agent excites in the throat, so that the worms are expectorated. In the latter manner the trouble is often perpetuated. If the lungs are consolidated, no treatment will be of any use. Death is brought about either by suffocation or by consolidation of the lungs.

Roup is an affective catarrhal disease, attacking game birds and poultry, being communicable by direct or indirect means, similar to those indicated under the

term "Enteric" (which see). It is indicated by a discharge from the nose and eyes, and by swelling of the head. The eyelids are closed. The nostrils become occluded, whilst there are other symptoms indicating that the birds are seriously ill.

Various forms of this trouble are described by writers, such as wet and dry Roup, all of which are either modifications of the same trouble, or else indications of an allied affection. Hence confusion from time to time arises. The affected birds should be isolated; disinfection thoroughly carried out, and all measures thoroughly enforced to restrict its extension.

Ophthalmia is sometimes a predominant feature in Roup, and, in this form, is well-known to many pheasant rearers. Complete blindness may result.

Roup is one of those affections which are, apparently, transmitted through the medium of the discharge from the eyes and mouth, and the ground where sick birds are roaming is very liable to be contaminated. When the disease appears in the pheasantry, it soon spreads throughout it, and, once established, stringent measures are necessary for its eradication. The best plan is to remove the healthy birds, if possible, but it is useless to transfer the pens to fresh ground until they have been thoroughly cleansed, such as by lime-whitening all the wooden fittings, and brushing over the network of the pens with a solution of carbolic acid and water, say half a pint of acid to two or three gallons of water. Individual birds can be treated by holding their heads over medicated steam. Add a teaspoonful of oil of eucalyptus to a pint of boiling water, and hold the head over it twice or three times a day. One of the following pills

can be given to each of the affected birds night and morning :—

Powdered Capsicum 24 grains.
Powdered Camphor 6 "
Sulphate of Iron 12 "
Oil of Eucalyptus 12 drops.
Sulphate of Quinine 6 grains.
Extract of Gentian, sufficient to make 24 small pills.	

This trouble, however, is one of those affections which run a definite course, and can hardly be cut short. Sponge the eyes and nose with a solution of boracic acid or of Hyposulphite of soda, 20 grains to the ounce. When a keeper is selecting broody hens, he should take particular care to examine them to see that they are free from roup, scaly-leg, and lice.

It is, as the writer knows, much easier to give such advice than to follow it, nevertheless it may serve as a warning note, and thus be the means of avoiding future trouble.

Another affection common amongst pheasants and poultry is the so-called Scaly-Leg, denoted by a scaly condition of the shank bone. The scales which cover it become displaced, owing to minute parasites (*sarcoptes mutans*) burrowing beneath the scales. The toes are also affected, and a most unsightly appearance is produced. The bird becomes lame, loses flesh, and there is considerable irritation.

The disease is contagious, though the affected and the unaffected may cohabit without any transfer of the trouble arising.

Balsam of Peru is an excellent remedy. So is Paraffin

Oil. The following ointment will usually effect a cure :

Balsam of Peru 2 drachms.
Flowers of Sulphur $\frac{1}{2}$ ounce.
Creosote 1 drachm.
Paraffin Oil 1 "
Boracic Acid Ointment ..	2 ounces.

Mix thoroughly and smear the affected limb night and morning.

An affection known to most game rearers is the so-called Cramp, which is apparently a rheumatic affection, and, like that disease, usually attributable to the same cause, namely exposure to damp.

Some pheasant rearers are very much troubled with this complaint, which is denoted by contraction of the toes, and inability to move about. The joints are stiff. Prevention is better than cure, as very little can be done for the affected birds. The coops must be shifted to drier grounds, and placed on some well-broken up peat-moss litter. Select a sheltered position for them, and exclude draughts and damp.

Pheasant chicks occasionally succumb to the so-called Cuckoo Spit, or Froth Worm, the frothy matter of which is often found on grasses, etc. This frothy material is emitted from the vent and other parts of the body, being ejected to hide and protect the insect. Within the spuma it changes from a larval state to a fully-winged insect. The chicks peck at the spits, and in doing so, take in the insects, owing to their thirst, so that if the birds are freshly supplied with water they will not trouble with the cockoo spit. The insect would appear to be taken into the crop alive, and whilst there, exudes spittle sufficient to cause suffo-

A SITTING PHEASANT.



cation. On some rearing fields this froth worm is very troublesome. If the land was dressed with a ~~top~~-dressing of salt, this would prove one of the best means of eradicating it.

All game birds, both young and old, are very liable to be troubled with Lice, and there are numerous species of these pests. It is quite possible that their presence on the bodies of pheasant, and partridge chicks, is associated with infectious enteric, in other words, Lice may, perhaps, act as intermediary bearers of the living organisms of enteric. The broody hen is frequently responsible for their introduction upon the rearing field, and the young birds will never thrive properly when irritated with these pests.

The nest boxes and the coops will readily harbour Lice, and remain constant sources of infection.

When a keeper is selecting his broody hens, he should examine them carefully for Lice, and, as a precautionary measure, it is a wise plan to give each bird a thorough dusting with flowers of sulphur, or, what is still better, dip them in a Quassia bath, made by infusing for 48 hours, one pound of Quassia chips to each gallon of water. Each bird should be dipped two or three times over. If collapsible nest boxes are used, these can also be treated with fresh lime.

Young birds (as pheasant chicks, etc.) can be dipped in the Quassia bath without the slightest fear of harm.

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